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NATURAL HISTORY SURVEY OF ILLINOIS.

STATE LABORATORY OF NATURAL HISTORY.

S. A. FORBES, Director.

THE ORNITHOLOGY OF ILLINOIS.

PART I. DESCRIPTIVE CATALOGUE.

BY ROBERT RIDGWAY.

PART II. ECONOMIC ORNITHOLOGY.

BY S. A. FORBES.

VOLUME I.

Published by Authority of the State Legislature.

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GENERAL INTRODUCTION

This volume is the first to appear of a series on the zoölogy and cryptogamic botany of the State of Illinois, authorized and provided for by the Thirty-fourth General Assembly.*

The series is intended to summarize the facts relating to the natural history of Illinois which have been accumulated by general investigations made in the districts of which the State forms a part, by the studies of local naturalists, and by the operations of the State Laboratory of Natural History.

The work of this institution has been especially directed, during the past twelve years, to the supply of the more important deficiencies remaining in our knowledge of the zoölogy and botany of the State. Neglecting the flowering plants and the classification and description of birds and mammals,—already fairly well studied for this region,—we have paid particular attention, so far as descriptive work is concerned, to the lower plants, to reptiles, amphibians, and fishes, and to insects and aquatic invertebrates. Still greater prominence has been given to a general research on the system of actions and reactions occurring within the assemblage of living forms native to Illinois, with a view to exhibiting the laws of interaction and coördination by which the innumerable host and vast variety of the plants and animals of our region are held together as a definitely organized, living whole.

As an item of this research the economic relations of the most important groups,—especially of birds, fishes, and insects,

*Laws of the State of Illinois, 1885, p. 23, sec. 3.

—have been studied extensively, and reference has been had at every step to the needs of the public schools and the higher institutions of learning.

In the preparation of the volumes of this report it will be our main final object to furnish the materials for a full and accurate picture of the native plant and animal life of Illinois as it actually exists in our fields, woods, and waters, and to bring most prominently into view those parts of the subject which have a peculiar educational or economic value. Especially we have hoped to furnish in this series a solid and permanent basis for the study and teaching of the natural history of this State and of its different sections, thus opening to the student and the teacher the way to a familiar knowledge of the life of his neighborhood in all the relations likely to have any important bearing on popular education or on the general welfare.

Classification and description must furnish the foundation of such a work; but to these will be added accounts of habits, of life history, and of relations to nature in detail and at large, as full as the state of our knowledge and the funds at our disposal will permit.

The volume here presented is due to the generous and disinterested labors of Dr. Robert Ridgway, formerly of Mt. Carmel, Illinois,—an ornithologist whose long and eminent service in the Smithsonian Institution and the United States National Museum seems only to have intensified his interest in the promotion of the study of his favorite science in his native State.

The technical and biological part (to be finished in Volume II.) will be followed in that volume by a second part devoted to a full and detailed discussion of the relations of our birds to nature at large, and especially to man. While the second part will be based upon the preceding, to which it will form a gen-

eral and economic appendix, it will be so constructed as to make it a practically independent manual of our economic ornithology,—using this term in its broadest sense.

The long delay in the publication of Volume I. has been due partly. to the pressure of other duties and to lack of office assistance, but chiefly to the destruction by fire in the printing office, in February, 1887, of an entire edition of the volume and of the plates and cuts from which it was printed.

To the characteristic generosity of the honored and lamented Dr. Spencer F. Baird, we owe the illustrations of this volume, with the exception of the frontispiece,—all being printed from copies of cuts loaned to the Laboratory by the Smithsonian Institution.

S. A. FORBES,
Director of Laboratory.

CHAMPAIGN, June 30, 1889.

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PART I.

A DESCRIPTIVE CATALOGUE

OF THE

BIRDS OF ILLINOIS.

BY ROBERT RIDGWAY.

PREFACE.

When, at Prof. Forbes's request, the writer consented to undertake the preparation of a work on the birds of Illinois, he had many misgivings as to his ability to perform the task within the alloted time; but by persistent labor during hours not required for other engagements, difficulties have been surmounted and the volume completed.

Were it not for the generous and cordial permission of the Director of the National Musuem to make use of the collections of that establishment in the preparation of this work, the undertaking would have been impossible to the author. The National Museum contains thousands of specimens of birds from Illinois, contributed by various naturalists now or formerly residing in the State, and to these free access has been granted. Among the principal collections are the following: (1) From Cook county and the southern portion of the State (chiefly Union county), by the lamented Robert Kennicott—Illinois' first and most gifted naturalist, who sadly ended a short but brilliant and promising career in the wilds of Alaska; (2) from Cook county, by Mr. E. W. Nelson, of Chicago, and (3) many interesting specimens from the same region by Mr. H. K. Coale, also of Chicago; (4) contributions of rare and interesting specimens from Warsaw, Hancock county, by Mr. Chas. K. Worthen; (5) a fine collection made at Mount Carmel, Wabash county, by my deceased young friend, Mr. Samuel Turner, and presented to the National Museum by his brother, Mr. Lucien M. Turner, now of the U. S. Signal Service; (6) occasional interesting specimens from Dr. J. Schneck, of Mount Carmel, and (7) specimens collected by the writer in Wabash and Richland counties, but chiefly in the vicinity of Mount Carmel.

The author is autoptically familiar only with the bird-fauna of the southeastern portion of the State. At Mount Carmel, his native place, observations were made almost continuously from about 1860 to 1867, while one month of each succeeding year has been mainly

or partially devoted to a continuation of investigations at the same place. The summer of 1885 was passed at Olney, Richland county, where several birds not observed at Mount Carmel were discovered; while subsequent visits to the same place, including several trips to the neighboring prairies, have further increased his knowledge of the bird-life of that locality.

Without the aid furnished by the collections above referred to, and the assistance kindly rendered by several gentlemen who have been making a special study of the birds of their respective neighborhoods, this catalogue would of necessity have been a purely local one. Mr. H. K. Coale, of Chicago, has most generously placed his note-books, full of valuable records, at the author's disposal, while Mr. Chas. K. Worthen has contributed many important notes; so that, with help from so many sources, together with various local lists, and other publications[1] on the birds of Illinois, it has been possible to prepare a tolerably full list of the birds of the State at large. Much remains to be done, however, especially in the western and extreme southern counties, which are certain to produce important and perhaps unlooked for additions.*

The author has endeavored to make the work as original as the circumstances would allow; but on account of the limited time allotted for its completion (one year), and being mainly occupied with other duties, he has found it necessary to draw, to a certain extent, upon previous publications. Thus, for the land-birds, many of the generic diagnoses have been taken from the *History of North American Birds*,[2] while for the water-birds the descriptions have been copied from *The Water Birds of North America*.[3] In every case, however, matter which is not original with the present work is enclosed in quotation marks, and the source whence obtained explicitly stated. It may further be explained that the author has the permission of the publishers to make extracts, at his discretion.

[1] A partial bibliography of Illinois ornithology is given on pages 36–42.

* The author at first intended to give an Appendix including descriptions of species which may in time be found within the borders of the State, and the collectors co-operating in identifying any species which may not appear in the catalogue proper; but the idea had to be abandoned on account of the necessity of limiting the number of pages of this work.

[2] A History of North American Birds, by S. F. Baird, T. M. Brewer and R. Ridgway. Land Birds. Illustrated by 4 colored plates and 300 wood cuts. Volume I, pp. i-xxxvi, 1-596, i-vi, plates i-xxxi. Volume II, 5 p. ii, pp. i-560, i-vi, plates xxvii-lvi. Volume III, 5 p. ii, pp. i-596, i i, i-xxvii, plates lvii-xci. Boston: Little, Brown and Company. 1874.

[3] Memoirs of the Museum of Comparative Zoölogy at Harvard College. Vol. XII. The Water Birds of North America, by S. F. Baird, T. M. Brewer and R. Ridgway. Issued in continuation of the publications of the Geological Survey of California. J. D. Whitney, State Geologist. (Volume I, pp. i-xi, 1-507. Vol. II, pp. i-552). Boston: Little, Brown and Company, 1884.

An original feature of the work—the vernacular synonymy*—will enable the reader to more readily identify, by reference to the index, any bird whose local name is known to him but whose scientific name he has not learned. The biographies are necessarily short, but it has been endeavored to mention the more prominent characteristics of each species.

For all faults of omission or commission, the author begs the indulgence of the generous reader. It has been with him so truly a "labor of love" that no effort has been spared to make the work as complete as the circumstances would allow; and it is hoped that it may prove in some degree useful to those who are engaged in the study of our birds.

SMITHSONIAN INSTITUTION, WASHINGTON, D. C.
JULY 2, 1885.

*A vernacular synonymy of North American birds was at one time contemplated by Mr. Ernest Ingersoll, who, in the *Bulletin of the Nuttall Ornithological Club*, Vol. VIII, April, 1883, pp. 73-76, called attention to the desirability of such a work, and gave a very interesting list of the numerous local names of the Common Swallow. Mr. Ingersoll's plan, however, was unfortunately never carried out; but it is to be hoped that may eventually be consummated.

INTRODUCTION.

I. Physical features of the State.

General. The total length of the State of Illinois is 378 miles, the extremes of latitude being 36° 59′ and 42° 30′, while the maximum breadth is 210 miles. The great length of the State from north to south gives it a climatic range of 5½ degrees, which exceeds that of any other State except California. The topography of Illinois is so simple, however, that any decided differences of climate or temperature must necessarily result from difference of latitude or season, there being no mountains sufficiently elevated to produce any perceptible modification in this respect.

"Illinois occupies the lower part of that inclined plane of which Lake Michigan and both its shores are the higher sections. Down this plane in a very nearly S. W. direction the principal rivers have their courses to the Mississippi. The lowest section of this plane is also the extreme S. angle of the State, and is only 340 ft. above the Gulf of Mexico. The greatest elevation of the country is 1,150 ft., and the mean elevation about 550 ft., above tide water. Next to Louisiana and Delaware, indeed, Illinois is the most level State of the Union. A small tract in the N. W. corner of the State around Galena is hilly and somewhat broken, and there are bluffs on the Mississipi and Illinois rivers; but by far the greater portion of the surface consists of vast level or gently undulating prairies. A low mountain ridge extends across the S. end of the State, from Grand Tower, on the Mississippi to Shawneetown on the Ohio, constituting the fruit region of southern Illinois." (*American Cyclopedia.*)

The highest point within the State is said to be near the northern border, between Freeport and Galena, where the so-called "mounds" are 1,100 to 1,150 feet above sea-level, though only 200 to 250 feet above the surrounding country. The lowest part of the State is, of course, the river-bed at Cairo, where the elevation above mean tide in the Gulf of Mexico is 340 feet. The general surface in the southern is much more varied or broken than that of the central

and northern portions, there being a bold, almost mountainous, range of hills with an elevation of 500 to more than 600 feet above the surrounding country, or a total altitude approximating 1,000 feet above sea-level, the lowlands along the *northern* side of the range averaging only about 55 feet above the river at Cairo. (Worthen's Geology of Illinois, Vol. I., pages 3 and 4.)

Continuations of this range extend, with occasional breaks or interruptions, to the northward, along the western border of the State. "A range of heights commences at the bluffs that bound the American Bottom, near Kaskaskia, and stretches northwardly through the State toward Lake Michigan. A noble limestone bluff breaks off, almost at right angles to this chain, and stretches along the margin of the American Bottom to the point nearly opposite the Missouri. This bluff has, in many places, a regular front of perpendicular limestone, not unfrequently 300 feet high. Another line of river bluffs commences opposite the mouth of the Missouri, and reaches the mouth of the Illinois. Opposite Portage des Sioux, these bluffs shoot up into detached points and pinnacles, which, with the hoary color of the rocks, have, at a distance, the appearance of the ancient spires and towers of a town." ("Illinois in 1837 & 8; a sketch descriptive of the country," etc. Philadelphia: S. Augustus Mitchel, 1838.) "Along the banks of the Upper Mississippi there stretch for hundreds of miles the ruined façades of stately castles and magnificent temples, built by Nature's hand. Seamed and scarred are they, too, as if by the lightning, and here and there appear ghastly rents and yawning chasms half concealed by vines sweeping from every ledge, and shrubs rooted in every crevice. One should see them in the beauty of the morning, as cool, silent and dark; with the dew heavy on rock and shrub, and trembling vine; mild convolvuli, full-blossomed and rejoicing in the shadow, swinging gaily from every projecting rock. And all through the autumn, while the oaks and maples and the vines, in russet and scarlet and gold, hold their death together, and with the clustering masses of golden-rod and purple asters, mock the cedars and hemlocks in their dress of sombre green." (M. L. W., in *The Pastime*, Washington, D. C. Vol. II, No. 5, May, 1884.)

There is probably no better index or key to the distribution of birds in any country than that afforded by the character of the vegetation; should this vary essentially within a given area, a corresponding difference in the bird-life is a certainty. The author may, therefore, be excused for going somewhat into detail on this subject.

The two extremes of the State present vast differences in the character of their vegetation, as might be expected from climatalogical considerations alone; but some of the most conspicuous dissimilarities arise from causes quite independent of climate. The southern third is for the most part heavily wooded, the northern and central portions mostly prairie. At least, this was the normal or original condition of things before the planting of orchards and shade trees in the prairie districts, and the clearing of forests in the wooded sections changed somewhat their relative proportions. The change thus wrought has been in some respects very great; but it is asserted (and certainly with truth as regards some sections) that the conversion, by Nature's own hand—though through the agency of civilized man by the stoppage of prairie fires—of what were prairies fifty years ago into what are forests at the present time, has very nearly, if not quite, balanced the extent of deforestation.

The northern *Coniferæ* are scarcely represented in the sylva of the State, only six (out of ten species found in the Northern States) occurring altogether, and nearly all of these solely in the northern tier of counties, and there locally. Thus, of the pines, *Pinus banksiana* (gray pine) occurs in Cook and Ogle counties*, and *P. strobus* (white pine) in Cook, Winnebago, and Ogle counties; the larch (*Larix americana*) in McHenry, Stephenson, and Winnebago counties, *Juniperus sabina*, var. *procumbens*, in Cook county, and the yew (*Taxus baccata*, var. *canadensis*) in Winnebago and Ogle counties; the only other one occurring in more than two counties being the arbor-vitæ (*Thuja occidentalis*), which has been found in Peoria, Cook and Kane counties. Of the numerous southern and eastern species of *Coniferæ*, only four, or possibly five, occur in Illinois, as follows: The bald cypress (*Taxodium distichum*) in the inundated lands of the southern part of the State; the white cedar (*Chamæcyparis sphæroidea*) in Gallatin county, and the yellow pine (*Pinus mitis*) on the rugged southern hills. It is supposed that a fifth species, the Jersey scrub pine (*Pinus inops*), probably occurs with the last species, since it is very abundant on the "knobs" of southern Indiana. Two species of general distribution, so far as the country at large is concerned, occur both in the northern and southern portions, though they are more or less local, and wanting, too, for the greater part of the State. These are the red cedar (*Juniperus virginiana*) and common juniper (*J. communis*).

* Probably in Lee county also (*fide* Professor Forbes, *in epist.*)

As to dicotyledonous trees, it may be said that while only 3 species (*i. e.*, wild red cherry, *Prunus pennsylvanica;* cork elm, *Ulmus racemosa,* and paper or canoe birch, *Betula papyracea,*) are confined to the northern portion of the State, at least 33 species are restricted mainly to the southern half, the following comprising the latter list: Cucumber tree (*Magnolia acuminata*), umbrella tree (*M. umbrella*), tulip tree (*Liriodendron tulipifera*)*, deciduous holly (*Ilex decidua*), Indian cherry (*Rhamnus caroliniana*), black locust (*Robinia pseudacacia*), water locust (*Gleditschia monosperma*)†, Chicasaw plum (*Prunus chicasa*), Washington thorn (*Cratægus cordata*), tree hawthorn (*Cratægus arborescens*), narrow-leafed crab-apple (*Pyrus augustifolia*), sweet gum (*Liquidambar styraciflua*), Hercules' club (*Aralia spinosa*), tupelo gum (*Nyssa uniflora*), farkleberry (*Vaccinium arboreum*), southern buckthorn (*Bumelia lycioides*), southern iron-wood (*B. lanuginosa*), silver bell tree (*Halesia tetraptera*), western catalpa (*Catalpa speciosa*), "privet" (*Forestiera acuminata*), winged elm (*Ulmus alata*), water elm (*Planera aquatica*), Mississippi hackberry (*Celtis mississippiensis*), water hickory (*Carya aquatica*), small shellbark (*C. microcarpa*), overcup oak (*Quercus lyrata*), Spanish oak (*Q. falcata*), willow-oak (*Q. phellos*), chinquapin (*Castanea pumila*), black alder (*Alnus serrulata*), yellow pine (*Pinus mitis*), white cedar (*Chamæcyparis sphæroidea*), and bald cypress (*Taxodium distichum*).

The decidedly "Austroriparian" *facies* presented by the vegetation of the southern counties (north to Wabash and St. Clair) is further illustrated by the parasitic mistletoe (*Phoradendron flavescens*), the arborescent grass, forest-reed, or switch-cane (*Arundinaria tecta*), and the large number of vines, besides the great luxuriance of vegetation generally. It will be best to treat of each section (so far as the writer possesses the knowledge to do so), under a separate heading, rather than to enter here into further details.

The Lake Shore District (by E. W. Nelson.‡) "The region about the southern end of Lake Michigan, in Illinois, presents an unusually fertile field for the ornithologist. Situated, as it is, midway between the wooded region of the East and the treeless plains of the West, with the warm river bottoms of the South, rich in southern species, extending within a comparatively short distance, and the great Lake upon the north, northeastern Illinois forms a kind of "four corners" where the avian-faunæ of four regions intergrade. To the proximity of Lake Michigan we are indebted for a

* North to Vermilion (*fide* Professor Forbes *in epist.*)

† North to Illinois River bottons, near the mouth of that stream (Forbes).

‡ In Bulletin of the Essex Institute (Salem, Mass.), Vol. VIII, 1876, pp. 90-92.

number of more or less strictly maritime species, among the most important of which are, during summer, *Ammodromus caudacutus*, *Ægialitis melodus* and *Anas obscura*, and, during the migrations, *Strepsilas interpres*, *Tringa bonapartei*, *T. maritima*, *T. canuta*, *Calidris arenaria*, with all the common water-birds, with very few exceptions, found upon the coast at that season. In winter the list is larger, during which season are found *Histrionicus torquatus*, *Harelda glacialis*, the three species of *Œdemia*, *Somateria mollissima*, *S. spectabilis*, *Stercorarius pomatorhinus*, *Larus glaucus*, *L. leucopterus*, *L. marinus*, and *Rissa tridactyla*.

"As would be expected, the southern species occur only in summer, with the exception of *Lophophanes bicolor*, which is found only in winter. The principal southern species are: *Mimus polyglottus*, *Parus carolinensis*, *Thryothorus ludovicianus*, *T. bewicki*, *Protonotaria citrea*, *Dendrœca* var. *albilora*, *D. cærulea*, *Oporornis formosus*, *Icteria virens*, *Myiodioctes mitratus*, *Pyranga æstiva*, *Collurio* var. *ludoviciana*, *Cardinalis virginianus*, *Centurus carolinus*, *Nauclerus forficatus*, *Rhinogryphus aura*, *Tantalus loculator*, *Gallinula martinica*, *Porzana jamaicensis*, *Sterna regia* and *S. antillarum*.

"We also have, either as residents or transient visitants, the following western species: *Myiadestes townsendi*, *Vireo belli* (breeds), *Hesperiphona vespertina*, *Plectrophanes pictus*, *Ammodromus lecontei*, *Zonotrichia* var. *intermedia*, *Z. coronata*, *Z. querula*, *Spizella pallida* (breeds), *Eremophila* var. *leucolæma* (breeds), *Sturnella* var. *neglecta* (breeds), *Scolecophagus cyanocephalus*, *Pica* var. *hudsonica*, *Chordeiles* var. *henryi* (breeds), *Buteo* var. *calurus* (breeds?), *B. swainsoni* (breeds?) *Tringa bairdii*, *Steganopus wilsoni* (breeds), and numerous others less strictly western.

"Not only is the influence of the Lake upon the fauna shown by the occurrence of numerous species of birds, attracted by the presence of a large body of water with its congenial surroundings, but the influence of the Lake upon the climate and the vegetation in its immediate vicinity has a marked influence upon the list of summer residents.

"As is well known, the country bordering upon the great lakes possesses an average lower temperature during summer, and a higher temperature during the winter, than the surrounding districts. This has a decided effect upon the movements and distribution of the birds in the vicinity of these large bodies of water.

"This influence is seen in a retardation, often of a week or more, in the spring migration, and in the scarcity of small woodland

species during the breeding season. Although birds are exceedingly numerous here during the migrations, and the number of species found during the summer compares favorably with the number found at the same season in other localities having the same latitude, they are represented by decidedly few individuals. This fact is especially noticeable after one has passed a day in the marshes of the vicinity, where the abundance of numerous marsh and water birds, both in species and individuals, would lead one to suppose the woods were equally favored.

"The limits of the field discussed in this paper embrace two counties, Cook county upon the south, and Lake county upon the north. Each possesses certain topographical peculiarities. Cook county is mainly prairie land, interspersed with ridges and groves of timber, the former of which generally extend parallel to the lake shore. Near the southeastern portion of the county the surface of the prairie is but slightly above the level of the lake. Through this county flows the Calumet river, along which are extensive marshes, which form a favorite haunt for various waterfowl. Along the lake shore, in northwestern Indiana, extending thence slightly into Illinois, is the Pinery, a peculiar, sandy, barren tract of land partly covered by a sparse growth of pines and deciduous underbrush, with, near the lake, patches of juniper. Lake county has much more woodland, and is more hilly or rolling than Cook county. Extending along the lake shore, from the northern border of the State nearly the entire length of this county, is a tract quite similar to the Pinery before described, except that here the sandhills near the lake are nearly covered with the junipers (*Juniperus communis*). Throughout this county are scattered a large number of small lakes, many of which have a marshy border and are much frequented by waterfowl, both during the migrations and the breeding season.

"The woods near Lake Michigan, in both these counties, are upon ridges extending parallel to the lake shore, which are separated by belts of prairie. These ridges form convenient highways for the woodland species during the migrations. The water birds either follow the lake shore or the river courses. The migrations of the latter are almost directly north and south, but with the woodland species it is quite different. They follow the heavily wooded river bottoms from the south, and approach the sparsely wooded States along the upper Mississippi in immense numbers, where they swerve toward the heavily wooded region of the northern lake region, where

they find extensive breeding grounds. This change in the direction of their migration causes them to move diagonally across the northern half of Illinois toward the northeast. To this we are indebted for the vast numbers of migrants found along the lake in this vicinity. Weary from their flight up the Mississippi and Illinois rivers, they halt along the inviting ridges bordering along the lake. After a short rest they resume their northward way, striking boldly across the lake towards their summer homes in northern Michigan and beyond. I have many times stood upon a wooded bluff on the lake shore and seen flock after flock of warblers and other small birds pass out of sight over the lake.

"The fall migration is less uniform, the birds straggling along in such a manner that it is difficult to trace any movement except a general inclination to the south. A severe storm upon the lake during the spring migration works sad havoc among the birds, for when a fog arises they become bewildered and perish by thousands, and large numbers are washed ashore. An instance of this kind occurred the last of May, 1876, when I counted over two hundred birds, representing over fifty species, in walking about a mile along the lake shore."

The Prairies. The author's personal acquaintance with the prairies, their vegetation and their fauna, is very limited. In his section of the State, there is no open or uncultivated prairie nearer to Mount Carmel than 25 miles, the nearest one being Allison's Prairie, opposite the city of Vincennes, Indiana.

In Jasper and Richland counties, prairies of considerable size occur. They are offshoots or arms of the Grand Prairie, although each particular arm or "bay" has its own distinctive name. A few miles west of Olney, Richland county, lies Fox Prairie; and to the southeast of this (the wooded bottoms of the Fox River and tributaries intervening) is Sugar Creek prairie. These two are the only prairies which the writer has explored ornithologically.

The first visit to Fox Prairie was made on the 8th of June, 1871, the writer and his companions arriving a little before noon. A rolling plain spread before us, the farther side bounded by timber, while the prairie itself was free from tree or brush, except where some intersecting stream was followed by a narrow line of thickets, interspersed with occasional fair-sized and gracefully formed elms; or along the edge, where the jungle of sumac, thorn-bushes, wild plum, hazel, etc., backed by young oak and hickory trees, showed plainly the encroachment of the woodland. Herds of horses and

cattle scattered about over the prairie, and two or three neat farm houses, with their attendant orchards and cultivated ground, made us realize that we were yet within the bounds of comfortable civilization; otherwise, the landscape presented much of its primitive aspect. The day was a delightful one; for, although the heat ranged above 80°, the fresh prairie breeze tempered it to a delightful mildness. Resting upon the cool, green-sward in the shade of a large elm in the hollow, our ears were delighted by such a chorus of bird-songs as we have heard nowhere else. Among the leafy arches overhead the Baltimore Orioles whistled their mellow flute-like notes, accompanied by soft, contented warble and joyous carol of the Warbling and Red-eyed Vireos; the birds of the meadow were chanting on every hand their several ditties, while the breeze wafted to us the songs of various woodland species. In the scrubby jungle a Mocking-bird fairly filled the air with his rich medly of varied notes, the singer leaping in restless ecstacy from branch to branch, with drooping wings and spread tail, or flitting from tree to tree as he sang. A Brown Thrasher poured forth a ceaseless accompaniment as he sat perched sedately upon the summit of a small vine-canopied tree—a contrast in bearing to the restive, sportive *Mimus*, his rival in vigor, and superior in sweetness, of song. Several Yellow-breasted Chats interpolated their loud cat-calls, vehement whistlings, and croaking notes. These three, loudest of the songsters, well nigh drowned the voices of the smaller birds; but in the brief intervals—"between the acts"—were heard the fine and sweet, though plaintive, song of the little Field Sparrow, the pleasant notes of the Chewink, the rich whistlings of the Cardinal, and the clear, proud call of Bob White. Upon proceeding to the thickets and thus interrupting the louder songsters, the wondrously strong and vehement notes of the "Chickty-beaver Bird" or White-eyed Vireo greeted us from the tangled copse, and soon a song we had never heard before—the gabbling, sputtering harangue of Bell's Vireo—attracted our attention and, of course, our interest. In the more open woods marking the border of the timber the several woodland species were noticed; there the Vermilion Tanager or Summer Redbird warbled his Robin-like but fine and well-sustained song, the Blue-jays chuckled and screamed as they prowled among the branches, and gaudy Red-headed Woodpeckers flaunted their tri-colored livery as they sported about the trunks or occasional dead tree-tops.

On the open prairie, comparative quiet reigned. The most numerous bird there was "Dick Cissel" (*Spiza americana*), who monopolized the iron-weeds, uttering his rude but agreeable ditty with such regularity and persistence that the general stillness seemed scarcely broken; hardly less numerous Henslow's Buntings were likewise perched upon the weed-stalks, and their weak but emphatic *se-wick* sounded almost like a faint attempt at imitation of Dick Cissel's song. The grasshopper-like wiry trill of the Yellow-winged Sparrow; the meandering, wavering warble of the Prairie Lark (*Otocoris alpestris praticola*)—coming apparently from nowhere, but in reality from a little speck floating far up in the blue sky,—and the sweet "*peek—you can't see me*" of the Meadow-lark, completed the list of songs heard on the open prairie. Many kinds of birds besides those already described were seen, but to name them all would require too much space. We should not, however, omit to mention the elegant Swallow-tailed Kites, which now and then wheeled into view as they circled over the prairie, or their cousins and companions, the Mississippi Kites, soaring above them through the transparent atmosphere; nor must we forget a pair of croaking ravens who, after circling about for a short time over the border of the woods, flew away to the heavy timber in the Fox River bottoms.

Early in the following August we paid a second visit to the same spot, and found a material change in its aspect. A season of universal drought having passed, the prairie, which before was comparatively brown and sober in its coloring, was bedecked with flowers of varied hue. The Mocking-birds, Brown Thrashers, Chats, and most of the other songsters, were silent, but the shrill screech of a large species of *Cicada* repeatedly startled us as we brushed against the weeds, while numerous grasshoppers were far more noisy than the birds. As we came well out on the prairie, however, a beautiful and unlooked-for sight appeared; in short, we were completely transfixed by the to us novel spectacle of numerous exquisitely graceful Swallow-tailed Kites floating about on bouyant wing, now gliding to the right or left, then sweeping in broad circles, and approaching so near that several were easily shot. Soaring lightly above them were many Mississippi Kites, of which one would now and then close its wings and plunge downward, as if to strike the very earth, but instantly checking the velocity of its fall by sudden spreading of the wings, would then shoot upward again almost to

the height from which it had descended. When two or more passed one another at opposite angles—as frequently happened—the sight was beautiful in the extreme.

The total number of species observed during these two trips, within the bounds of the prairie itself, numbered about ninety-five on each occasion; while the surrounding woodlands, cultivated grounds and river bottoms added so many more, that a total of about one hundred and forty species were ascertained to, in all probability, breed upon an area five miles square, having for its centre the portion of the prairie where we made our investigations. Of this grand total, only twenty-five were water-birds, the remainder of one hundred and fifteen species of land-birds being, perhaps, as large a number of regular summer residents as any locality of equal extent in North America can boast.

A third visit to this prairie was made early in June, 1883—exactly twelve years after the first trip. The change which had taken place in the interval was almost beyond belief. Instead of an absolutely open prairie some six miles broad by ten in extreme length, covered with its original characteristic vegetation, *there remained only 160 acres not under fence.* With this insignificant exception, the entire area was covered by thriving farms, with their neat cottages, capacious barns, fields of corn and wheat, and even extensive orchards of peach and apple trees. The transformation was complete; and it was only by certain ineffacable landmarks that we were able to identify the locality of our former visits. As a consequence, we searched in vain for the characteristic prairie birds. Upon the unenclosed tract of 160 acres—a common grazing ground for the herds of the neighborhood—Dick Cissels, Henslow's Buntings, Yellow-winged Sparrows, and the Meadow-larks were abundant as ever; and running in the road, now wallowing in the dust, then alighting upon a fence stake, were plenty of Prairie Larks (*Otocoris*); but—shades of Audubon!—equally numerous were the detestable and detested European House Sparrow, already ineradicably established. We searched in vain for Bell's Vireo, for all the thickets had been destroyed. Neither was a solitary kite, of either species, to be seen. We left our beautiful prairie with sad heart, disgusted with the change (however beneficent to humanity) which civilization had wrought.

The same is the history of all the smaller prairies in many portions of the State; and it will probably not be many years before a prairie in its primitive condition cannot be found within the limits of Illinois.

The Southern Bottom Lands. As a typical example of a locality presenting the characteristic features of the southern bottom-lands, I shall select, for special description, the "Cypress Swamps" of Knox county, Indiana, which, to the writer, have been the scene both of many fruitful explorations and delightful memories.

The series of ponds which, together with their connecting "sloughs," constitute the so-called cypress swamps, are situated on the point of land known as "The Neck," a sort of peninsula between the mouth of White River, on the south and east, and the Wabash, on the west. The most southerly of these ponds lies about two miles to the northeast of Mount Carmel, in a direct line; and interspersed through the forest, at distances from one another of from a hundred yards or less to perhaps a quarter of a mile, are other ponds, varying in their shape, extent and character. Those best known are designated as the "Cypress," "Forked," "Beaver-dam," and "Washburne's" ponds, the latter being the largest. They all drain, by connecting swamps, into White river, a short distance above the mouth of the latter stream, through a crooked ditch, known as the "White River slough," deeply cut through the alluvial soil and everywhere overshadowed by dense forest.

Some of these ponds are mostly open, but others are filled with willow trees (*Salix nigra*), averaging perhaps 50 feet, but occasionally growing more than 70 feet, in height, but of slender form; while even the open ponds have a bordering fringe of these trees, occasionally mixed with swamp cottonwood (*Populus heterophylla*). In the swampy tracts between the ponds grow dense and tangled thickets of button-bush (*Cephalanthus occidentalis*), clumps of black alder or water holly (*Ilex decidua*), tall stems of *Amorpha fruticosa*, and occasional crooked, thorny trees of the water locust (*Gleditschia monosperma*). The open portions of the ponds are in summer choked with a rank growth of various aquatic plants, the "spatter-dock" (*Nuphar advena*) prevailing, but giving way in deeper water to the beautiful western pond lily (*Nymphæa tuberosa*).

The southern cypress (*Taxodium distichum*)—here almost at its northern limit—formerly grew in abundance and attained magnificent proportions about the borders of the ponds and in the intervening swamps, as well as along the main "slough," but at present few fine trees are to be seen. Nowhere do they now form the exclusive or even prevailing growth, but are scattered singly or in groups among tall sycamores, ashes (*Fraxinus americana*), sweet gums (*Liquidambar styraciflua*), water oaks (*Quercus palustris*) and

other moisture-loving trees, and attain an average height of about 100 feet. Good-sized birches, *Betula nigra* (and *lenta?*), also grow along the margins of the ponds. It should be added that these ponds are nowhere very deep, and that they consequently sometimes become completely dry in seasons of extreme drought.

The surroundings of these ponds consist of continuous magnificent forest (now deprived of many of its finest trees and no doubt doomed to early destruction), comprising everywhere a mixed growth, embracing altogether more than fifty species of trees, among which oaks (11 species) and hickories (5 species) predominate, although the sweet gum, black gum (*Nyssa sylvatica*), box-elder (*Negundo aceroides*), white elm (*Ulmus americana*), honey-locust (*Gleditschia triacanthos*), coffee-bean (*Gymnocladus canadensis*), black walnut (*Juglans nigra*), hackberries (*Celtis occidentalis* and *mississippiensis*), tulip tree (*Liriodendron tulipifera*), and other species are (or were) also abundant; there are also a few beeches (*Fagus ferruginea*), and black cherries (*Prunus serotina*), besides occasional specimens of the beautiful *Catalpa speciosa*. These woods are very open, it being comparatively easy, in many places, to drive through them with a light wagon. There is almost no shrubby undergrowth, the usual underwoods consisting of red-bud (*Cercis canadensis*), dog-wood (*Cornus florida*), pawpaw (*Asimina triloba*), and mulberry (*Morus rubra*) here attaining the stature of good-sized trees. The unobstructed sunlight, which, directly or by reflection and diffusion, freely permeates all portions of these beautiful forests, promotes the development of a luxuriant and varied herbaceous growth—grasses, sedges, ferns, flags, balsam-plants (*Impatiens fulva* and *pallida*), cardinal flower (*Lobelia cardinalis*), etc., according to locality, and others far too numerous to mention; even the decaying logs are covered with weeds, thus presenting the appearance of miniature gardens. Other characteristic features are the abundance and luxuriance of climbing plants, embracing no less than four (probably five) species of wild grape, the Virginia creeper (*Ampelopsis quinquefolia*), cross-vine (*Bignonia capreolata*), trumpet-flower (*Tecoma radicans*), pipe-vine (*Aristolochia tomentosa*) and others, not forgetting the far too abundant poison vine (*Rhus toxicodendron*). The switch-cane (*Arundinaria tecta*) occasionally chiefly monopolizes the soil, and the scouring rush (*Equisetum hyemale*) sometimes constitutes the exclusive growth, but only in a few places of limited extent.

It is because of this abundance of sunlight and exuberance of vegetation, that these woods surpass all others in abundance of

bird-life, and therefore afford the richest field for the ornithologist. The willows are the chosen home of the Prothonotary Warbler (*Protonotaria citrea*); the undergrowth, of the Hooded and Blue-winged Yellow Warblers (*Sylvania mitrata* and *Helminthophila pinus*); ducks and other aquatic species have a secure home in the shelter of the water-lilies; herons build their nests in the lofty tops, and turkey buzzards hide their young in the hollow bases, of the gigantic sycamores. Thirty years or more ago, Parakeets (*Conurus carolinensis*) disturbed the solitude or drowned the voices of the songsters by their piercingly shrill screeching notes, but they have long since vanished, never to return. The turkey still lingers, however, but must surely disappear when its shelter shall have passed away.

Climate. The climatic conditions of Eastern North America are remarkably uniform, as might be expected from the exceeding simplicity of its topographical features. The Alleghany mountains, although sufficiently elevated to carry on their summits many Canadian types, both of plants and animals, quite to the southern limits of the range, in northern Georgia and Alabama, yet form so slight a barrier that a very large majority of the species in both the animal and vegetable kingdoms are common to the Atlantic seaboard and the Mississippi Valley. In fact, diversity of flora in the two regions is usually due chiefly to local causes—character of soil and geological formation—it being a common circumstance to find localities along the Atlantic coast and in the interior which more resemble one another in their vegetation than do contiguous localities in either district.

It is a well known fact, however, that in the interior of large continents the climate reaches greater extremes of temperature than in the same latitudes along the seacoast; and this principle applies to the districts here under consideration, though to a very slight extent. From the meteorological records of the United States Signal Office, we are able to deduce the information that, as a rule, in cases where the mean annual temperature is essentially the same at places of corresponding latitude on the Atlantic coast and in the Mississippi Valley, the annual range is greater in the latter; that is, the maximum heat of summer and minimum cold of winter excel those of the former. The rainfall also, as a rule, is somewhat heavier along the coast. There are many exceptions, however, to these rules, and instances can be found where, according to the records, they are reversed.

With regard to this subject we cannot, in the present work, enter into detail, but must be content with presenting a few data by way of illustration of the above remarks.

In the "Tables and Results of the Precipitation, in Rain and Snow in the United States," collected and published (in 1872 and 1881) by the Smithsonian Institution, Professor Charles A. Schott, the compiler, recognizes (pp. 127—133 of first edition, 197-203 of second edition), ten geographical areas, each of which is characterized by marked peculiarities in the distribution and quantity of the rainfall. Illinois comes chiefly if not entirely within "Type IV" of these regions, including the Ohio Valley, which is characterized as follows: "One principal maximum, and one principal minimum; the former early in June, the latter early in February. Range, moderate." This region is to be compared, in the illustration of our subject, with "Type I. *Atlantic seacoast from Portland to Washington,*" which has "Three nearly equal maxima, about the middle of May, August and December, and one principal minimum about the beginning of February;" "the range between the extreme monthly values .... small," .... and "the August maximum .... generally the highest."

These are, however, mere technical differences, only appreciable to, or recognizable by, the meteorologist.

With the following data* we shall dismiss this subject:—

I. *Comparative mean annual temperature and rainfall.*

Chicago.—Lat. 41°52′ alt. 660.92 feet.

Mean annual temperature (8 years)..... ..... 49°1.
Total annual rainfall (8 years(.....35.27 inches.

Boston.—Lat. 42°21′, alt. 142.19 feet.

Mean annual temperature (9 years).....48°4.
Total annual rainfall (9 years).....50.82 inches.

Indianapolis, Ind.—Lat. 39°47′, alt. 746.58 feet.

Mean annual temperature (1 year)..... ...53°3.
Total annual rainfall (8 years).....45.22 inches.

Philadelphia, Pa.—Lat. 39°57, alt. 52.42 feet.

Mean annual temperature (9 years).....53°1.
Total annual rainfall (8 years(.....42.93 inches.

*Compiled from the Annual Reports of the Chief Signal Office, U. S. Army, 1871-1880.

Cincinnati, Ohio.—Lat. 39°6′, alt. 620.42 feet.

Mean annual temperature (8 years).....55°3.

Total annual rainfall (8 years).....42.39 inches.

Baltimore, Md.—Lat. 39°28′, alt. 45.19 feet.

Mean annual temperature (8 years).....55°5.

Total annual rainfall (8 years).....42.46 feet.

St. Louis, Mo.—Lat. 38°37′, alt. 567.67 feet.

Mean annual temperature (8 years).....55°5.

Total annual rainfall (8 years).....39.67 inches.

Washington, D. C.—Lat. 38°53′, alt. 105.56 feet.

Mean annual temperature (9 years).....55°1.

Total annual rainfall (9 years).....42.73 inches.

II. *Comparative mean monthly and annual temperature and rainfall at Cairo, Illinois, (lat. 37°0′, alt. 377.35 ft.) and Norfolk, Virginia (lat. 36°51′, alt. 54.50 ft.), for 10 years.*

Maximum Mean Annual Temperature for 10 Years.

	Year of observation.	January...	February..	March.....	April.....	May.....	June.....	July.....	August....	September	October...	November.	December.	Annual mean.
Cairo	1878	39.8	44.7	57.8	64.3	68.1	73.9	82.7	81.2	70.6	59.0	50.1	33.2	59.62
Norfolk	1876	47.7	45.0	46.5	55.3	65.7	78.1	81.7	78.2	69.7	56.8	49.4	33.6	58.92

Minimum Mean Annual Temperature for 10 Years.

Cairo	1875	28.3	32.9	44.8	54.8	65.8	74.2	78.9	73.6	67.5	55.2	45.9	45 6	55.62
Norfolk	1872	35.0	37.0	39.0	57.0	68.0	76.0	81.0	79.0	72.6	58.9	46.2	36.8	57.20

Average Mean Annual Temperature for 8 Years.

Cairo	57.9
Norfolk	58.7

Mean Annual Rainfall for 10 Years.

	January...	February..	March.....	April.....	May.....	June.....	July.....	August....	September	October...	November.	December.	Total*.....
Cairo	2.97	3.50	4.39	4.31	3.80	4.64	3.93	2.88	2.51	3.02	4.06	3.42	42.83
Norfolk	3.50	3.05	4.21	3.98	3 27	4.02	5.36	6.36	4.91	3.69	3.83	4.36	50.54

*The comparative rainfall of the two localities, as given in the report of the Chief Signal Officer for 1880, is as follows:—

Cairo, 8 years, (1871–79)	45.09 inches.
Norfolk " "	53.83 "

Observations taken at West Salem, Edwards Co., Illinois, (lat. 38° 30′, long. 88°), for 4 years, give almost exactly the same total precipitation for the year as that which, according to the above table, has been ascertained for Cairo, the difference amounting to only .60 of an inch. The monthly means are considerably different, however, as the following will show. In this table are also included the results of observations at New Harmony, Posey Co., Indiana, (lat. 38° .08′, long. 87° 50′), for 12 years—both being compiled from the Smithsonian tables of precipitation, above referred to:—

	January...	February..	March	April.....	May.....	June	July.....	August....	September	October...	November.	December.	Year .....
West Salem, 4 years.....	2.86	3.47	2.04	3.80	4.50	4.59	4 85	3 42	2.83	1.74	4.09	4.13	42.23
New Harmony, 12 years.....	2.77	2.51	3.40	3.50	3.76	4.09	3.11	3.19	3.87	2.25	3.21	3.09	38.75

The rainfall is apportioned to the different seasons, as follows:—

	Spring.....	Summer...	Fall	Winter.....
West Salem, 4 years.....	10.34	12.77	8.66	10.46
New Harmony, 12years	10.66	10.39	9 33	8.37

The maximum and minimum mean annual rainfalls, during the years of observation, at the above mentioned localities was as follows:

West Salem.—Maximum (1858)..... ..... 51.00 inches.
Minimum (1859)..... 41 02 "
New Harmony.—Maximum (1855)..... 48.11 "
Minimum (1856)..... 23.18 "

Meteorological observations have been taken regularly at Mount Carmel during the past few years by Mr. James Pool, recently appointed U. S. Signal Observer, who has kindly favored me with the following data:

Mean monthly temperature and total precipitation, for the year 1876. (Three obervations daily, viz., at 7 A. M., 2 P. M., and 9 P. M., local time.)

	Precipitation.	Mean temperat'r
January	9 35	42.1°
February	2.71	39.6
March	5.04	40.6
April	3.33	56.1
May	1.79	65.1
June	6.24	74.0
July	1.68	80.1
August	3.81	76.2
September	2.63	67.3
October	1.74	54.9
November	2.10	41.0
December	1.95	23.4
Total precipitation	42.39 in.	
Mean annual temperature		55.3°

The largest rainfall in 24 hours during 1876 was 2.60 inches. The maximum heat for the year was 97°, and greatest degree of cold during the winter 1876-7 was 0° (zero).

Rainfall during the year commencing June 16, 1884, was as follows:

June	0.38
July	2.05
August	1.29
September	5.35
October	2.33
November	1.97
December	7.59
January	3.81
February	1.48
March	0.95
April	1.69
May	2.75
June	3.59
Total for the year	35.23 inches.

Maximum precipitation during 24 hours in 1883.....4.40 inches.
Maximum precipitation during 24 hours from June 16, 1884, to June 15, 1885.....2.09 inches.
Maximum temperature for summer of 1884.....+98°
" " " 1885.....+98
Minimum temperature for winter of 1883-4.....—25°
" " " 1884-5.....—15°

The following are a few of the unusually heavy rainfalls for localities in Illinois as recorded in the report of the Chief Signal Officer for 1880:

Louisville: 2 inches in 5 hours (Jan. 2, 1880), 5 inches in 2 hours (July 1, 1878). *Peoria:* 3.94 inches (May 8, 1880). *Rock Island:* 3.74 inches (June 1, 1880). *Cairo:* 3 inches in 90 minutes (June 27, 1879). *Elmira:* 3.29 inches in 1 hour 55 minutes (August 19, 1878.) *Chicago:* 4.14 inches (July 26, 1878).

II. Characteristic Features of the Avifauna of the State.

General Remarks. Observations in many sections of the State from which we as yet have no data, and also more extended investigations in those sections already explored, are necessary before we can have an accurate knowledge of the distribution of the species within our limits. At present we know the subject merely in outline, and what we assume to know is undoubtedly subject to greater or less modification—according to the species involved—in the light of future information. The following tables are, therefore, to be considered as provisional, and as expressing merely the author's present knowledge of the subject, based in part on his own explorations, but to a greater extent on the published records of other observers.

A. *Species which have been observed in Winter over the greater portion of the State, many of them regular Winter residents.*

1. Merula migratoria.
2. Sialia sialis.
3. Regulus satrapa.
4. Parus bicolor.
5. Parus atricapillus.
6. Sitta carolinensis.
7. Sitta canadensis.
8. Thryothorus ludovicianus.
9. Troglodytes hyemalis.
10. Anthus pensilvanicus.
11. Lanius ludovicanus.
12. Ampelis cedrorum.
13. Carpodacus purpureus.
14. Loxia minor.
15. Loxia leucoptera.
16. Acanthis linaria.
17. Spinus tristis.
18. Calcarius lapponicus.
19. Zonotrichia albicollis.
20. Spizella monticola.
21. Junco hyemalis.
22. Cardinalis cardinalis.
23. Sturnella magna.
24?. Sturnella neglecta.
25. Corvus sinuatus.
26. Corvus americanus.
27. Cyanocitta cristata.
28. Otocoris alpestris.
29. Otocoris alpestris praticola.
30. Dryobates villosus.
31. Dryobates pubescens.
32. Sphyrapicus varius.
33. Ceophlœus pileatus.
34. Melanerpes carolinus.
35. Melanerpes erythrocephalus.
36. Colaptes auratus.
37. Asio wilsonianus.
38. Asio accipitrinus.
39. Nyctala acadica.
40. Megascops asio.
41. Bubo virginianus.
42. Syrnium nebulosum.
43. Falco peregrinus.
44. Falco columbarius.
45. Falco sparverius.
46. Circus hudsonius.
47. Accipiter atricapillus.
48. Accipiter cooperi.
49. Accipiter velox.
50. Buteo borealis.
51. Buteo lineatus.
52. Buteo pennsylvanicus.
53. Archibuteo sancti-johannis.
54. Aquila chrysætos.
55. Haliætus leucocephalus.
56. Ectopistes migratoria.
57. Meleagris gallopavo.
58. Bonasa umbellus.
59. Tympanuchus pinnatus.
60. Colinus virginianus.
61. Ardea herodias.
62. Olor buccinator.
63. Olor columbianus.
64. Chen hyperboreus.
65. Chen cœrulescens.
66. Anser gambeli.

67. Branta canadensis.
68. Branta hutchinsii.
69. Anas boschas.
70. Anas obscura.
71. Anas strepera.
72. Dafila acuta.
73. Anas americana.
74. Anas discors.
75. Anas carolinensis.
76. Aythya vallisneria.
77. Aythya americana.
78. Glaucionetta islandica.
79. Glaucionetta americana.
80. Charitonetta albeola.
81. Histrionicus histrionicus.
82. Clangula hyemalis.
83. Oidemia perspicillata.
84. Merganser americanus.
85. Merganser serrator.
86. Lophodytes cucullatus.
87. Larus argentatus.
88. Larus delawarensis.
89. Colymbus holboelli.
90. Urinator imber.
91. Urinator lumme.

B. *Species which have been observed in Winter only in the Southern portion of the State, (latitude of Mount Carmel, or further South).*

The following list is based in part upon the observations of Mr. Cyrus W. Butler, "during the month of December and January, "in the vicinity of Anna, Union Co., lat. 37° 30′, as recorded by Mr. W. W. Cooke, in *Forest and Stream* for Jan. 1 and 8, 1885,* but chiefly on the author's observations at Mount Carmel, about one degree farther northward.

1. Turdus pallasi.
1*a*. Turdus swainsoni.
2. Mimus polyglottos.
3. Galeoscoptes carolinensis.
4. Harporhynchus rufus.
5. Regulus calendula.†
6?. Parus carolinensis.
7. Certhia americana.
8. Thryothorus bewickii.
9. Cistothorus palustris.
10. Cistothorus stellaris.
11. Dendroica coronata.
12. Dendroica pinus.
13. Dendroica palmarum.
14. Seiurus noveboracensis.
15. Poocætes gramineus.
16. Ammodramus savanna.
17. Ammodramus passerinus.
18. Ammodramus henslowi.
19. Ammodramus lecontei.
20. Zonotrichia leucophrys.
21. Spizella socialis.
22. Spizella pusilla.
23. Melospiza fasciata.
24. Melospiza georgiana.
25. Melospiza lincolni.
26. Passerella iliaca.
27. Pipilo erythrophthalmus.
28. Molothrus ater.
29. Xanthocephalus xanthocephalus.
30. Agelaius phoeniceus.
31. Scolecophagus carolinus.
32. (Scolecophagus cyanocephalus.)
33. Quiscalus æneus.‡
34. Sayornis phœbe.
35. Ceryle alcyon.
36. Strix pratincola.
37. Pandion carolinensis.
38. Cathartes aura.
39. Catharista atrata.
40?. Zenaidura macroura.
41. Nycticorax nævius.
42. Botaurus lentiginosus.
43. Ægialitis vociferus.
44. Philohela minor.
45. Gallinago delicata.
46. Rallus elegans.
47. Rallus virginianus.
48. Porzana carolina.
49. Porzana noveboracensis.
50. Porzana jamaicensis.
51. Gallinula galeata.
52. Fulica americana.
53. Spatula clypeata.
54. Aix sponsa.
55. Aythya marila.

* See Bibliography, p. 42.

†Professor Forbes writes me that "Mr. Garman has shot this species a little past the middle of winter near Normal," (McLean county).

‡Has been known to winter at Normal (*fide* Professor Forbes).

56. Aythya affinis.
57. Aythya collaris.
58. Erismatura rubida.
59. Phalacrocorax dilophus.
60. (Stercorarius longicaudus.)
61. Colymbus auritus.
62. Colymbus californicus.
63. Podilymbus podiceps.

NOTE.—The interrogation mark prefixed to some of the above species, implies doubt as to whether they are restricted, as winter residents, to the southern portion of the State. Species enclosed in parenthesis may be considered as accidental, being based on a single known occurrence.

C. *Species occurring in Winter in the Northern portion of the State, but not yet observed as far South as Mount Carmel, are the following:*

1. (Myadestes townsendi.)
2. (Sialia arctica.)
3. (Parus hudsonicus.)
4. Lanius borealis.
5. Ampelis garrulus.
6. Coccothraustes vespertinus.
7. Pinicola enucleator.
8. Acanthis exilipes.
9. Acanthis rostratus.
10. Plectrophenax nivalis.
11. Calcarius pictus.
12. (Rhynchophanes maccowni.)
13. (Pica hudsonica.)
14. Picoides arcticus.
15. Ulula cinerea.
16. Nyctala richardsoni.
17. Bubo subarcticus.
18. Surnia caparoch.
19. (Lagopus lagopus.)
20. Somateria dresseri.
21. Somateria spectabilis.
22. Oidemia americana.
23. Oidemia velvetina.
24. Rissa tridactyla.
25. Larus glaucus.
26. Larus leucopterus.
27. Larus marinus.
28. Xema sabinei.
29. Sterna tschegrava.
30. Stercorarius pomarinus.
31. Urinator arcticus.

NOTE.—Species in parenthesis may be considered as accidental.

D. *Summer residents of General Distribution.*

1. Turdus mustelinus.
2. Merula migratoria.
3. Mimus polyglottos, S.
4. Galeoscoptes carolinensis.
5. Harporhynchus rufus.
6. Sialia sialis.
7. Polioptila cærulea, S.
8. Parus carolinensis, S.
9. Sitta carolinensis.
10. Thryothorus ludovicianus, S.
11. Thryothorus bewickii, S.
12. Troglodytes aëdon.
13. Cistothorus palustris.
14. Cistothorus stellaris.
15. Mniotilta varia, S.
16. Protonotaria citrea.
17. Helmitherus vermivorus, S.
18. Helminthophila pinus, S.
19. Compsothlypis americana.
20. Dendroica æstiva.
21. Dendroica cœrulea, S.
22. Dendroica albilora, S.
23. Dendroica pinus.
24. Dendroica discolor.
25. Seiurus aurocapillus.
26. Seiurus motacilla, S.
27. Geothlypis formosa, S.
28. Geothlypis trichas.
29. Icteria virens.
30. Sylvania mitrata, S.
31. Setophaga ruticilla.
32. Vireo olivaceus.
33. Vireo gilvus.
34. Vireo flavifrons.
35. Vireo noveboracensis.
36. Vireo bellii.
37. Lanius ludovicianus.
38. Ampelis cedrorum.
39. Progne subis.
40. Petrochelidon lunifrons.
41. Chelidon erythrogaster.
42. Tachycineta bicolor.
43. Clivicola riparia.
44. Stelgidopteryx serripennis.
45. Piranga erythromelas.
46. Piranga rubra, S.
47. Spinus tristis.
48. Ammodramus savanna, N.

49. Poocætes gramineus, N.
50. Ammodramus passerinus.
51. Ammodramus henslowi.
52. Chondestes grammaca.
53. Spizella socialis.
54. Spizella pusilla.
55. Pipilo erythrophthalmus.
56. Cardinalis cardinalis S.
57. Passerina cyanea.
58. Spiza americana.
59. Molothrus ater.
60. Agelaius phœniceus.
61. Sturnella magna.
62. Icterus galbula.
63. Icterus spurius, S.
64. Quiscalus æneus.
65. Corvus sinuatus.
66. Corvus americanus.
67. Cyanocitta cristata.
68. Otocoris praticola.
69. Tyrannus tyrannus.
70. Myiarchus crinitus.
71. Sayornis phœbe.
72. Contopus virens.
73. Empidonax trailli.
74. Empidonax acadicus.
75. Trochilus colubris.
76. Chætura pelagica.
77. Antrostomus vociferus.
78. Chordeiles virginianus.
79. Dryobates villosus.
80. Dryobates pubescens.
81. Ceophlœus pileatus.
82. Melanerpes carolinus, S.
83. Melanerpes erythrocephalus.
84. Colaptes auratus.
85. Ceryle alcyon.
86. Coccyzus americanus.
87. Coccyzus erythrophthalmus.
88. Conurus carolinensis.
89. Strix pratincola, S.
90. Asio wilsonianus.
91. Syrnium nebulosum.
92. Megascops asio.
93. Bubo virginianus.
94. Falco peregrinus.
95. Falco columbarius.
96. Falco sparverius.
97. Pandion carolinensis.
98. Elanoides forficatus, S.
99. Ictinia mississippiensis, S.
99*a*. Circus hudsonius.
100. Accipiter cooperi.
101. Accipiter fuscus.
102. Buteo borealis.
103. Buteo lineatus.
104. Buteo swainsoni.
105. Buteo pennsylvanicus.
106. Haliæetus leucocephalus.
107. Cathartes aura, S.
108. Ectopistes migratoria.
109. Zenaidura macroura.
110. Meleagris gallopavo.
111. Bonasa umbellus.
112. Tympanuchus pinnatus.
113. Colinus virginianus.
114. Ardea herodias.
115. Ardea virescens.
116. Nycticorax nævius.
117. Botaurus lentiginosus.
118. Botaurus exilis.
119. Ægialitis vociferus.
120. Ægialitis melodus, N.
121. Philohela minor.
122. Totanus solitarius.
123. Actitis macularius.
124. Symphemia semipalmata.
125. Bartramia longicauda.
126. Numenius longirostris, N.
127. Phalaropus tricolor, N.
128. Recurvirostra americana.
129. Himantopus mexicanus.
130. Rallus elegans.
131. Rallus virginianus, N.
132. Porzana carolina, N.
133. Porzana noveboracensis.
134. Porzana jamaicensis.
135. Gallinula galeata.
136. Fulica americana.
137. Grus americana, N.
138. Grus mexicana.
139. Branta canadensis.
140. Anas boschas.
141. Anas discors, N.
142. Aix sponsa.
143. Erismatura rubida.
144. Lophodytes cucullatus.
145. Phalacrocorax dilophus.
146. Sterna forsteri.
147. Hydrochelidon surinamensis, N.
148. Podilymbus podiceps.

NOTE.—The initial S. following a name indicates that the species is more abundant southward; "N," on the other hand, implies that the species so distinguished belongs chiefly to the northern portion of the State.

E. *Summer residents confined mainly, so far as known, during that season to the Northern portion of the State.*

1. Turdus fuscescens.
2. Turdus swainsoni.
3. Parus atricapillus.
4. Sitta canadensis.
5. Helminthophila chrysoptera.
6. Helminthophila ruficapilla.
7. Dendroica pennsylvanica.
8. Dendroica virens.
9. Seiurus noveboracensis.
10. Geothlypis philadelphia.
11. Sylvania canadensis.
12. Vireo philadelphicus.
13. Carpodacus purpureus.
14. Ammodramus nelsoni.
15. Zonotrichia albicollis.
16. Spizella pallida.
17. Melospiza fasciata.
18. Melospiza georgiana.
19. Melospiza lincolni.
20. Habia ludoviciana.
21. Dolichonyx oryzivorus.
22. Xanthocephalus xanthocephalus.
23. Sturnella magna.
24. Empidonax minimus.
25. Asio accipitrinus?
26. Nyctala acadica.
27. Circus hudsonius.
28. Aquila chrysætos?
29. Pediocætes campestris.
30. Ægialitis melodus?
31. Gallinago delicata.
32. Totanus melanoleucus.
33. Totanus flavipes.
34. Anas obscura.
35. Anas strepera.
36. Anas americana.
37. Dafila acuta.
38. Spatula clypeata.
39. Anas carolinensis.
40. Aythya affinis.
41. Aythya collaris.
42. Sterna hirundo.
43. Colymbus auritus.
44. Urinator imber.

NOTE.—The interrogation mark implies doubt as to whether the breeding range of the species is really so restricted.

F. *Summer residents which, so far as known, are confined mainly to the Southern portion of the State.*

1. Helinaia swainsoni.
2. Peucæa bachmani.
3. Guiraca cœrulea.
4. Antrostomus carolinensis.
5. Campephilus principalis.
6. Catharista atrata.
7. Tantalus loculator.
8. Ardea egretta.*
9. Ardea candidissima.
10. Ardea cœrulea.
11. Ardea rufa.
12. Nycticorax violaceus.
13. Anhinga anhinga.

G. *Summer visitants to Southern portion of the State, but not ascertained to breed within our limits.*

1. Passerina ciris. (Mt. Carmel, June, 1871.)
2. Elanus leucurus. (Mt. Carmel, summer, 1863?)
3. Asturina plagiata. (Richland Co., August, 1871.)
4. Buteo harlani. (Warsaw, Hancock Co., March, 1879.)
5. Guara alba. (Mt. Carmel, May, 1881, and at other times.)
6. Plegadis autumnalis.
7. Ajaja ajaja. (Mississippi bottom, about 1860; said to have been common.)
8. Ardea occidentalis. (Mt. Carmel, September, 1876).
9. Pelecanus fuscus. (Warsaw, Hancock Co., October 1873.)
10. Phalacrocorax mexicanus. (Cairo; summer.)

*"Abundant all summer on the Illinois River as far north as Peoria." (Professor Forbes, *in epist.*)

H. *Irregular or casual Visitants from the Western Province.*

1. Sialia arctica. (Winter.)
2. Myadestes townsendi. (Winter.)
3. Rhynchophanes maccowni. (Winter.)
4. Zonotrichia querula. (Spring and fall.)
5. Junco oregonus. (Fall.)
6. Scolecophagus cyanocephalus. (Winter.)
7. Pica hudsonica. (Winter.)
8. Sayornis sayi. (Season not known.)
9. Bubo subarcticus.
10. Falco mexicanus. (Fall.)
11. Buteo krideri. (Summer.*)
12. Buteo calurus. (Spring.)
13. Archibuteo ferrugineus. (Fall.)
14. Anas cyanoptera.

I. *Regular Residents or Visitants which intrude from the Westward.*

a. Observed only in Summer.

1. Vireo bellii. (Breeding.)
2. Spizella pallida. (Breeding.)
3. Xanthocephalus xanthocephalus. (Breeding.)
4. Chordeiles henryi. (Breeding?)

b. Observed only in Winter, or during migration.

5. Coccothraustes vespertinus.
6. Ammodramus lecontei. (Breeding?)
7. Colymbus californicus.

c. Observed irrespective of season.

8. Chondestes grammaca. (Breeding.)
9. Sturnella neglecta. (Breeding.)
10. Buteo swainsoni. (Breeding.)
11. Pediocætes campestris. (Breeding.)

J. *Stragglers and doubtful species, the former including those of which not more than one specimen has been taken or observed.*

1. Sialia arctica. W.
2. Myadestes townsendi. W.
3. Parus hudsonicus. N.
4. Junco oregonus. N.
5. Passerina ciris. S.
6. Pica hudsonica. N.
7. Sayornis sayi. W.
8. Buteo calurus. W.
9. Buteo krideri. N. W.
10. Buteo harlani. S.
11. Asturnia plagiata. S.
12. Ardea occidentalis. S.
13. Pelecanus fuscus. S.
14. Phalacrocorax mexicanus. S.

* Probably breeding.

K. *Species formerly occurring but possibly now to be found in the State.*

1. Pica hudsonica.
2. Campephilus principalis.
3. Conurus carolinensis.
4. Lagopus lagopus.
5. Ajaja ajaja.

Position with regard to Faunal Provinces or Districts.—Illinois lies far within the Eastern, or Atlantic, Province, and were it not for the prairies its fauna would probably not possess the slightest tincturing of western forms. The State is also wholly embraced within the "Carolinian Fauna" of Mr. Allen;* but the southern portion possesses so many of the elements characterizing the "Louisianian Fauna" (or "Austroriparian Province" of Professor Cope†), that it should probably be referred to the latter district—and has, in fact, been so referred by Mr. Allen, Professor Cope and other writers.

With regard to so-called geographical variation Illinois likewise belongs strictly to the Eastern or Atlantic Province, none of the resident or summer-resident species showing any tendency toward the representative forms which belong to the Western Province, except very rarely, or sporadically, and apparently not more frequently than along the Atlantic coast itself. The writer has been able to obtain but a single example of *Pipilo erythrophthalmus* showing white spots on wing-coverts or scapulars, and this example has these markings less distinct than have two specimens obtained at Washington, D. C. He has been able to secure but one specimen of *Sphyrapicus varius* showing an indication of a red nuchal bar, and in this case also the feature is less developed than in one from the District of Columbia. Among more than one hundred Flickers shot in Wabash and Richland counties, only one showed the slightest variation toward the western type (*C. mexicanus*), in a very slight tinge of red at the end of the black moustache, much less, indeed, than in some specimens from Pennsylvania, the District of Columbia, and Florida.* The same observation may be made with respect to other species, with scarcely an exception, the only one, in fact, being the case of *Geothlypis trichas*, the Illinois form of which seems to be the western race, *G. trichas occidentalis*, Brewst., which, however, apparently replaces the true *G. trichas* everywhere west of the Alleghanies.

*See Bulletin of the Museum of Comparative Zoölogy, Cambridge, Mass., Vol. II., No 3. pp. 393-395.

† See Bulletin of the United States National Museum, No. 1, 1875, pp. 67-71.

*The specimen in question is, however, almost exactly matched by one from Marin Co., California, (coast, north of San Francisco).

In the southern portion of the State, there is observable in some species a marked tendency to the characters of extreme southern races, in smaller size and darker coloration, and, in some species, larger bill. This tendency is especially noticeable in the quails (*Colinus virginianus*) from the bottom-lands of the lower Wabash, some specimens of which are so much like the Florida form (*C. virginianus floridanus*) that they have been referred to that race.

Migrations.—Data for the elucidation of this subject are unfortunately very meagre. While residing at Mount Carmel, the author made careful record of the dates of arrival and departure of many species during the years 1863–'65, inclusive, the results of which are herewith given:—

Spring Arrivals.

Species marked with an asterisk (*) sometimes remaining all winter.

*1.	Anas boschas	January	15.
*2.	Ectopistes migratoria	"	15—Feb. 25.
*3.	Dafila acuta	"	20.
*4.	Branta canadensis	"	20—Feb. 14.
*5.	Merganser americanus	"	20.
*6.	Spatula clypeata	"	20.
*7.	Aythya americana	"	25.
*8.	Anas carolinensis	February	1.
*9.	Anas americana	"	13—28.
10.	Seiurus motacilla	"	20.
*11.	Aix sponsa	"	25.
*12,	Anas discors	"	28.
13.	Grus mexicana	March	1—4.
14.	Grus americana	"	6.
*15.	Charitonetta albeola	"	1.
16.	Phalacrocorax floridanus	"	1—7.
17.	Charadrius dominicus	"	12.
18.	Spizella socialis	"	13—19; remains until Sept. 20.
19.	Tringa maculata	"	15.
20.	Tachycineta bicolor	"	15—24; remains until Sept. 20.
21.	Progne subis	"	20—28; remains until Sept. 8.
*22.	Harporhynchus rufus	"	21—26.
23.	Bartramia longicauda	"	28.
24.	Regulus calendula	April	1—9.
25.	Mniotilta varia	"	1—15.
26.	Chelidon erythrogastra	"	2—5.
27.	Polioptila cœrulea	"	2—10; remains until Sept. 20.
28.	Chætura pelagica	"	3—11; remains until Oct. 20.
29.	Numenius longirostris	"	4.
30.	Stelgidopteryx serripennis	"	8—12; remains until Oct. 17.
31.	Dendroica albilora	"	9—18; remains until Sept. 13.
32.	Petrochelidon lunifrons	"	10—20; remains until Sept. 20.
33.	Dendroica æstiva	"	14—22.
34.	Vireo noveboracensis	"	15.
35.	Tyrannus tyrannus	"	15—21; remains until Sept. 9.

*36.	Dendroica palmarum	April	16—23; remains until Oct. 15.
37.	Antrostomus vociferus	"	17.
*38.	Galeoscoptes carolinensis	"	18—24; remains until Oct. 5.
39.	Icterus galbula	"	19—22; remains until Sept. 14.
40.	Icterus spurius	"	19—25.
41.	Passerina cyanea	"	19; remains until Oct. 15.
42.	Vireo flavifrons	"	19; remains until Oct. 15.
43.	Empidonax trailli	"	19.
44.	Empidonax acadicus	"	19.
45.	Myiarchus crinitus	"	19–26; remains until Sept. 10.
46.	Turdus mustelinus	"	19—21; remains until Oct. —.
47.	Vireo philadelphica	"	20.
48.	Piranga erythromelas	"	20—23; remains until Sept. —.
49.	Piranga rubra	"	20—29; remains until Sept. 27.
*50.	Geothlypis trichas	"	20—30; remains until Sept. 16.
51.	Spiza americana	"	22—30.
52.	Vireo olivaceus	"	22; remains until Oct. 15.
53.	Protonotaria citrea	"	23.
54.	Icteria virens	"	23—May 4.
55.	Dendroica pennsylvanicas	"	26.
56.	Geothlypis formosa	"	28; remains until Oct. 15.
57.	Dolichonyx oryzivorus	"	29—May 7.
58.	Coccyzus americanus	"	29—May 14.
59.	Chordeiles virginianus	May	2—8.
60.	Dendroica tigrina	"	3.
61.	Contopus virens	"	6—7; remains until Oct. 15.
62.	Habia ludoviciana	"	6; remains until Oct.

Autumnal Arrivals.

1.	Sphyrapicus varius	September	15—29.
2.	Ampelis cedrorum*	"	18.
3.	Junco hyemalis	"	26—Oct. 21.
4.	Certhia americana	"	29—Nov. 2.
5.	Dendroica coronata	October	1—4.
6.	Sitta canadensis	"	2.
7.	Regulus satrapa	"	2.
8.	Melospiza georgiana	"	8.
9.	Zonotrichia albicollis	"	9—10.
10.	Carpodacus purpureus	"	20—Nov. 8.
11.	Zonotrichia leucophrys	"	15.
12.	Spizella monticola	"	20—Nov. 1.
13.	Loxia minor	"	22.
14.	Passerella iliaca	"	27.
15.	Anthus pensilvanicus	November	15.
16.	Troglodytes hyemalis	"	3—Dec. 25.
17.	Aquila chrysaëtos	September	8.
18.	Melospiza fasciata	October	15.
19.	Calcarius lapponicus	"	20.

* Since ascertained to be also a summer resident, though much more numerous in winter.

To show the relation between the return of birds from the South and the vernal change of vegetation, I give the following dates of the leafing and flowering of certain plants at Mt. Carmel, as noted in the spring of 1872, by Dr. J. Schneck. It should be remarked, however, that the season was much later than usual. (See foot-note below.)

Species.	Date of leafing.	Date of flowering.
Red Maple (*Acer rubrum*)	April 12	March 20*
Silver Maple (*Acer dasycarpum*)	" 12	April 8
Sugar Maple (*Acer saccharinum*)	" 15	
Shell-bark Hickory (*Carya alba*)	" 13	
Redbud (*Cercis canadensis*)	" 20	April 10
Wild Cherry (*Prunus serotina*)	" 5	" 25
Flowering Dogwood (*Cornus florid*)	" 20	
White Ash (*Fraxinus americana*)		April 12
Tulip Poplar (*Liriodendron tulipifera*)	April 4	
Peach (*Persica vulgaris*)	" 20	April 12
Apple (*Pyrus malus*)	" 13	" 20
White Oak (*Quercus alba*)	" 13	
Lilac (*Syringa vulgaris*)	" 19	April 12
American Elm (*Ulmus americana*)		March 30†
Wild Columbine (*Aquilegia canadensis*)	April 20	
Spring Beauty (*Claytonia virginica*)	" 6	April 12‡
Dogs-tooth Violet (*Erythronium americanum*)	" 20	
Crane's-bill (*Geranium maculatum*)	" 25	
Liverwort (*Hepatica triloba*)		March 31§
Blue Flag (*Iris versicolor*)	April 13	
May Apple (*Podophyllum peltatum*)	March 30	
Blackberry (*Rubus villosus*)	April 10	
Elder (*Sambucus canadensis*)	March 30	
Blood-root (*Sanguinaria canadensis*)	April 12	April 14

* In 1876, flowered February 1.
† In 1876, flowered February 15.
‡ In 1876, flowered March 2.
§ In 1876, flowered March 2.

The date of flowering of additional species, in 1876, was noted by Dr. Schneck, as follows:

Species.	Date of leafing.	Date of flowering.
Ranunculus abortivus	March 1....	.....
Capsella bursa-pastoris	" 1....	.....
Pear (*Pyrus communis*)	April 1....	April 20-21*
Apple (*Pyrus malus*)	March 30....	April 20† ..
White Oak (*Quercus alba*)	April 24 ...	.....
Currant (*Ribes rubrum*)	March 28....	April 13‡ ..
Blackberry (*Rubus villosus*)	" 30....	May 10§ ..
Elder (*Sambucus canadensis*)	April 2....	June 15....
Blood-root (*Sanguinaria canadensis*)	March 10....	April 2....
Lilac (*Syringa vulgaris*)	April 13....	April 30....
Dandelion (*Taraxacum dens-leonis*)	.....	April 13....
White Elm (*Ulmus americana*)	April 13....	March 25....

For purpose of comparison, I give below the earliest and latest recorded dates of arrival for a number of species at Mt. Carmel, Illinois; Wheatland, Indiana; St. Louis, Missouri, and Washington, D. C.,—localities in nearly the same latitude. For the latter, I am indebted to Mr. H. W. Henshaw and Mr. Wm. Palmer, of Washington, who have kindly given me their records; the data for St. Louis, I have compiled from Mr. Otto Widman's "General Notes and Weather Report from St. Louis," published in Bulletin No. 1 of the Ridgway Ornithological Club, of Chicago,[1] which abound with valuable data pertaining to the subject of bird-migration in the Mississippi Valley.

* Fruit ripe July 30. † Fruit ripe July 10. ‡ Fruit ripe June 10. § Fruit ripe July 1.

[1] Cook, W. W., and Widman, Otto.—Bird Migration | in the | Mississippi Valley. | —— | By | W. W. Cook and Otto Widmann. | —— | Read before the | Ridgway Ornithological Club. | November 8, 1883. | —— | Published in the "American Field" | Vol. XX, No. 22, to Vol. XXI, No. 3. | Published in pamphlet form with the following title on cover: The | Ridgway Ornithological Club, | of | Chicago, Illinois, U. S. A. | —— | Bulletin No. 1. | Bird Migration in the Mississippi Valley | By | W. W. Cooke and Otto Widmann | —— | Published by | The American Feild, | December, 1883. 8 vo., pp. 37, the contents as follows: "Part I. Introduction. | —— | (W. W. Cooke.)" Pp. 3, 4. "Part II. | —— | General Notes and Weather Report from St. Louis, | Mo., beginning with January 1, 1883. | —— | O. Widmann." | Pp. 5-13. "Part III. | —— | General Notes on Birds and Weather at Jefferson, | Wisconsin, in the Spring of 1883. | —— | W. W. Cooke." Pp. 14-18. "Part IV. | —— | Notes on each species of Bird observed at St. Louis, | Missouri, and Jefferson, Wisconsin, during the | Spring Migraion of 1883. | —— | Pp. 19-37.

	Mt. Carmel, Ills., 1863-'66.	Wheatland, Ind., 1881-1883.	St. Louis, Mo., 1883.	Washington, D. C., 1875-1884.
1. Antrostomus vociferus	April 17	April 15	April 1	April 18—May 11
2. Compsothlypis americana		" 16-18	" 17.	May 6-13
3. Geothlypis trichas	April 20-30	" 18-18	" 17.	April 22—May 1.
4. Vireo olivaceus	" 22	" 16-21	" 25.	
5. Vireo noveboracensis	" 15	" 16-18	" 14.	April 18-28
6. Empidonax minimus		" 17	May 5	April 20—May 2
7. Turdus mustelinus	April 19-21	" 171-8	April 19.	April 28—May 2
8. Sylvania mitrata		" 25	" 17.	
9. Seiurus aurocapillus		" 16-20	" 17.	April 20—May 7
10. Tyrannus tyrannus	April 18-21	" 16-19	" 18.	May 3
11. Vireo gilvus		" 17-24	" 18.	
12. Vireo flavifrons	April 19	" 17	" 17.	
13. Dendroica vigorsii		" 17-19	" 21.	Mar. 15—May 12
14. Dendroica albilora	April 9-18	" 17	" 12.	
15. Dendroica æstiva	" 14-22	" 17-18	" 18.	April 28—May 5
16. Dendroica cærulea		" 17-25	" 17.	
17. Dendroica palmarum	April 16-23	Apr. 18—(May 2.)	" 13.	April 15
18. Dendroica virens		" 18—(May 3.)		May 7—11
19. Helminthophila pinus		April 18-23	April 17.	
20. Sylvania canadensis		" 18-30	May 14*.	May 14—15
21. Passerina cyanea	April 19	" 18-30	April 21.	May 9—12
22. Chondestes grammaca		" 18-21	" 3.	
23. Piranga erythromelas	April 20-23	" 18-30	" 27	May 11-13
24. Piranga rubra	" 20-29	" 18-23	" 26.	
25. Chætura pelagica	" 3-11	(" 18.)	" 8.	
26. Myiarchus crinitus	" 19-26	" 18-19	" 17.	
27. Galeoscoptes carolinensis	" 18-24	" 19-20	" 18.	April 30
28. Turdus aliciæ		" 20		May 12
29. Turdus fuscescens		" 21-25*	May 14.	May 14
30. Icteria virens	April 23—May 4.	" 22-6	April 23.	May 2-24
31. Trochilus colubris		" 24-25	May 11.	
32. Helmitheros vermivorus		Apr. 24—(May 8.)		May 7-14
33. Dendroica pennsylvanica	April 26.	" 24—(May 3.)	April 27.	May 10-11
34. Spiza americana	" 22-30	April 24-26	" 21.	

	Mt. Carmel, Ills., 1863-'66.	Wheatland, Ind., 1881-1883.	St. Louis, Mo., 1883.	Washington, D. C., 1875-1884.
35. Icterus galbula	" 19-22	Apr. 24—(May 4.)	" 19.	April 29—May 4
36. Geothlypis formosa	" 28	April 20-30*	May 2	
37. Setophaga ruticilla		" 25	April 17.	April 20—May 2
38. Habia ludoviciana	May 8	" 20-25	" 22.	
39. Coccyzus americanus	April 29—May 14	" 25	May 16	
40. Ammodramus passerinus		" 26	April 26.	
41. Contopus virens	May 6-7	" 26—May 2	May 5	
42. Icterus spurius	" 19-25	" 19(-29)	April 18.	May 1-8
43. Dendroica castanea		Apr. 30—May 10.	May 3	
44. Dendroica maculosa		May 2-5	" 3	
45. Dendroica cærulescens		" 2-6	" 3	April 29—May 7
46. Chordeiles virginianus	May 2-8	April 24—May 2.	" 15	May 11-15
47. Dendroica blackburniæ		May 3-8		May 111-6
48. Helminthophila peregrina		" 3-7	April 25.	
49. Helminthophila chrysoptera		" 5	May 2	
50. Dolichonyx oryzivorus	April 29—May 7.	" 5	" 2	May 11-15
51. Geothlypis philadelphia		" 6	" 16	
52. Helminthophila ruficapilla		" 6	" 2	
53. Dendroica tigrina	May 3	" 6-9	" 2	
54. Vireo philadelphicus	April 20	" 9	April 21.	
55. Dendroica striata		" 10	May 2	May 11-28

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"GENERAL SUMMARY."

["Found irrespective of season 77
Found only in summer 92
Found only in winter 47
Found only in spring and fall 71
Total number of species 288
Number of species breeding, about 155
Number of species wintering, about ..... 155"]

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COALE, HENRY K.—MacCown's Longspur in Illinois. <*Bull. Nutt. Orn. Club*, April, 1877, p. 52. [Champaign, Ill., Jan. 15; 3 specimens.]

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1878.

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RIDGWAY, ROBERT.—On a new species of *Peucæa* from Southern Illinois and Central Texas. <*Bull. Nutt. Orn. Club*, October, 1879, pp. 218–222. [*P. illinoensis*,=*P. æstivalis bachmani*.]

1880.

RIDGWAY, ROBERT.—On six species of Birds new to the Fauna of Illinois, with notes on other rare Illinois Birds. <*Bull. Nutt. Orn. Club*, V., January, 1880, pp. 30–32. [*Zonotrichia querula, Buteo harlani, Ajaja ajaja, Pelecanus fuscus, Phalacrocorax mexicanus, Stercorarius buffoni* (=*longicaudus*), *Coturniculus* (=*Ammodramus*) *lecontei, Ammodramus caudacutus nelsoni, Elanoides forficatus, Protonotaria citrea, Oporornis formosa, Ibis* (=*Guara*) *alba, Larus franklini*.]

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BIRDS OF ILLINOIS.

In the following catalogue are included only those species which undoubtedly occur at the present time, and those of whose former occurrence there exists reliable evidence. In strict accuracy, *Campephilus principalis*, *Conurus carolinensis*, and *Ajaja ajaja* might with propriety be excluded from the regular list and included in a special category. I have decided to retain them, however, for the reason that any doubt which may now exist concerning their present or very recent occurrence can be supported by merely negative evidence, based upon extremely meager data; while my experience relating to other southern species, resulting from a personal, though by no means thorough, exploration of localities more than 100 miles north of Cairo, leads me to expect interesting discoveries (some of them perhaps unanticipated), from careful observations in some of the more secluded portions of the extreme southern counties of the State. It is not at all impossible that in these fastnesses, the above mentioned species may still exist.

The classification and nomenclature followed in the present work are those adopted by the special committee of the American Ornithologists' Union, and used in the official check-list of the Union, now being printed. As to the classification, however, I have reversed the sequence of families and higher groups, preferring to commence, as has been customary, with the Thrushes.

ANALYSIS OF HIGHER GROUPS.

a.[1] Rectrices present.
b.[1] Nostrils not tubular.
c.[1] Hind toe, if present, not connected with the anterior ones by a membrane.
d.[1] Bill without fringed or serrate tomia.
e.[1] Anterior toes not webbed, or else legs excessively lengthened.
f.[1] Lower part of tibia feathered, or else toes united for most of their length.
g.[1] Bill not hooked, or else without cere.
h.[1] Hind toe, if present, incumbent.
i.[1] No web between bases of anterior toes.
j.[1] Toes 3 or 4 anteriorly.
k.[1] Anterior toes cleft to the base, or else not united beyond first phalanx.
l.[1] Secondaries more than 6.
m.[1] Middle toe considerably longer than the lateral ones.
n.[1] Base of bill without cere.
o.[1] Posterior half of tarsus undivided, or if divided the segments distinct from those on anterior portion. **Passeres** (*Oscines*).
o.[2] Posterior half of tarsus reticulate, or else anterior covering wrapping entirely around the outer and posterior sides to a groove on the inner side..**Passeres** (*Clamatores*).
n.[2] Base of bill consisting of a soft, swollen cere.....**Columbæ.**
m.[2] Middle toe not longer than one or the other of the outer ones..... **Macrochires** (*Cypseli*).
l.[2] Secondaries 6.....**Macrochires** (*Trochili*).
k.[2] Anterior toes connected at base for more than their basal phalanx.... **Coccyges** (*Alcyones*).
j.[2] Toes 2 anteriorly.
k.[1] Bill strongly hooked..... **Psittaci** (*North American species*).

*k.*² Bill not strongly hooked.
*l.*¹ Rectrices rigid, acuminate.....**Pici.**
*l.*² Rectrices neither rigid nor acuminate.
*m.*¹ Inner hind toe 5-jointed.
Coccyges (*Trogones*).
*m.*¹ Inner hind toe 2-jointed.
Coccyges (*Cuculi*).
*i.*² With webs between bases of anterior toes.
*j.*¹ Gape excessively broad and deeply cleft. Wings greatly elongated.....
Macrochires (*Caprimulgi*).
*j.*² Gape normal. Wings short, concave...
Gallinæ (*Penelopes*).
*h.*² Hind toe elevated.....**Gallinæ** (*Phasiani*).
*g.*² Bill strongly hooked, with a distinct cere at base.
*h.*¹ Toes 2 in front.....**Psittaci** (*exotic species*).
*h.*² Toes 3 in front, or else outer toe reversible.
*i.*¹ Hind toe incumbent.
*j.*¹ Eyes directed forward. Outer toe reversible.....**Accipitres** (*Striges*).
*j.*² Eyes lateral. Outer toe not reversible (except *Pandion*).....**Accipitres** (*Falcones*).
*i.*² Hind toe short, elevated...**Accipitres** (*Sarcorhamphi*).
*f.*² Lower part of tibia not feathered near joint, or else bill lengthened and grooved.
*g.*¹ Hind toe, if present, elevated, or else claws extremely lengthened.
*h.*¹ Whole head feathered, or else size small (length less than 1 foot).....**Limicolæ.**
*h.*² Part of head naked. Size large (more than 3 feet long).....**Paludicolæ** (*Grues*).
*g.*² Hind toe incumbent, and claws never extremely lengthened.
*h.*¹ Loral and orbital regions fully feathered.....
Paludicolæ (*Ralli*).
*h.*² Loral or orbital regions, or both, naked.
*i.*¹ Inner edge of middle claw pectinated.....
Herodiones (*Herodii*).
*i.*¹ Inner edge of middle claw not pectinated.
*j.*¹ Sides of maxilla without trace of lateral groove.....**Herodiones** (*Ciconiæ*).
*j.*² Sides of maxilla with distinct lateral groove.....**Herodiones** (*Ibides*).
*e.*² Anterior toes distinctly webbed.
*f.*¹ Legs inserted underneath the equilibrium, the body being horizontal when in standing position.....**Longipennes.**
*f.*² Legs inserted far backward, the body being more or less erect when in a standing position.....**Pygopodes** (*Cepphi*).
*d.*² Bill with distinctly fringed or toothed tomia.
*e.*¹ Legs extremely lengthened; bill bent abruptly downward at the middle.....**Odontoglossæ.**
*e.*² Legs short or but moderately lengthened; bill not bent downwards in middle.....**Anseres.**
*c.*² Hind toe connected with the inner one by a web.....**Steganopodes.**
*b.*² Nostrils tubular.....**Tubinares.**
*a.*² Rectrices entirely absent.....**Pygopodes** (*Podicipedes*).

ORDER PASSERES.—THE PASSERINE BIRDS.

CHARACTERS.—Three toes in front and one behind; the latter well-developed and on a level with the rest. Bill without a cere, and never distinctly hooked.* Primaries 9 or 10; secondaries 9; rectrices usually 12, rarely 10 or 14. Wing-coverts arranged in three series or tracts, as follows: (1) a well-defined *lesser-covert* area, the numerous small feathers of which are arranged in several rows, the feathers alternately in more or less squamate fashion; (2) the *middle coverts*, which form a single row, the feathers of which overlap one another with their inner webs, or the reverse of all the other feathers of the wing; (3) the *greater coverts*, which overlie the basal portion of the secondaries, but covering less than the basal half of the latter.

The Order Passeres includes the vast assemblage of so-called "Perching Birds," which comprises by far the larger part of known species. The majority of them are of small size, but there are many exceptions to this rule, the Raven and other large *Corvidæ* being true Passeres.

The Passeres include two rather distinct major groups, which may be distinguished as follows:—

Oscines. Tarsus compressed posteriorly, with comparatively sharp hinder edge; or else, hind claw longer than its digit, and straight.

Clamatores. Tarsus cylindrical, the hind claw shorter than its digit and distinctly arched.

ANALYSIS OF FAMILIES OF PASSERES.

A. Oscines.

a^1. Posterior half of tarsus compressed, with two lateral plates uniting in a comparatively sharp edge, and for the most part undivided.
  b^1. Primaries obviously 10, or else tip of bill hooked.
    c^1. Tarsi "booted," i. e. the anterior plates undivided for the greater portion of their length.
      d^1. With distinct rictal bristles. Rectrices normally developed. Nostril oval.
        e^1. Larger (wing more than 3.00 inches). Young distinctly spotted ..... Turdidæ.
        e^2. Smaller (wing less than 3.00 inches). Young not spotted..... Sylviidæ (*Sylviinæ*, *Regulinæ*).
      d^2. Without rictal bristles. Rectrices much abreviated. Nostrils linear..... Cinclidæ.
    c^2. Tarsi not booted, but anterior plates divided for the greater portion of their length into more or less distinct segments, or "scutellæ"
      d^1. Bill strongly hooked..... Laniidæ.

*An exception to this is found in the Family *Laniidæ*, in which the maxilla is conspicuously uncinate, with a pronounced notch and well developed tooth behind it. All the other characters of this family, however, are distinctly Passerine.

d^2. Bill not strongly hooked.
e^1. Tarsus longer than middle toe with claw, or the bill elongated, not depressed, narrower at base than length of culmen.
f^1. Bill moderately hooked at tip.....Vireonidæ.
f^2. Bill not distinctly hooked at tip.
g^1. Tail-feathers stiff, pointed at tip.....Certhiidæ.
g^2. Tail-feathers normal.
h^1. Nasal feathers directed forward.
i^1. Smaller (wing less than 4.00 inches).
j^1. Bill notched, subulate.....Sylviidæ (*Polioptilinæ*).
j^2. Bill without notch, more or less conoid.....Paridæ.
i^2. Larger (wing more than 4.00 inches).....Corvidæ.
h^2. Nasal feathers erect or inclined backward.
i^1. Bill elongate-conical, culmen straight. First primary minute, not reaching to tip of coverts. Sturnidæ
i^2. Bill not conical, culmen more or less curved. First primary well developed, extending beyond tips of coverts.....Troglodytidæ.
e^2. Tarsus not longer than middle toe with claw. Bill short, depressed, width at base exceeding length of gonys.....Ampelidæ.
b^2. Primaries apparently only 9, the tip of the bill not hooked.
c^1. Bill very short, very broad at base and deeply cleft, the gape more than twice as long as the culmen. Outer primary more than twice as long as the innermost.....Hirundinidæ.
c^2. Bill variously formed, but gape never twice as long as culmen, etc. Outer primary less than twice as long as the innermost.
d^1. Bill decurved and very acute at tip.....Cærebidæ (*Certhiola*).
d^2. Bill not decurved.
e^1. Bill not conoid; angle of gonys not forward of the nostril.
f^1. Tertials elongated, reaching nearly to tip of longest primaries. Hind claw nearly as long as, or longer than, its digit.....Motacillidæ.
b^2. Tertials not elongated, falling far short of tips of longest primaries. Hind claw much shorter than its digit.....Mniotiltidæ.
e^2. Bill conoid; if slender, the angle of the gonys forward of the nostril.
f^1. Bill notched, and with bristles at gape.
g^1. Nostril exposed, rounded anteriorly, and without distinct operculum. Base of tomia not forming a distinct angle.....Tanagridæ.
g^2. Nostril concealed by feathers, or pointed anteriorly and overhung by a distinct operculum, or base of tomia forming a distinct angle.....Fringillidæ
f^2. Bill without notch, and without bristles at gape.....Icteridæ.
a^2. Posterior half of tarsus not compressed, but rounded and divided into distinct segments, or "scutellæ," like the anterior half.....Alaudidæ.

B. Clamatores.

a^1. Inner toe entirely free at the base from the middle one. Posterior face of tarsus not reticulate.....Tyrannidæ.
a^2. Inner toe with basal phalanx united to that of middle toe. Posterior face of tarsus reticulate.....Cotingidæ.

Family **TURDIDÆ**.—The Thrushes.

Characters.—Bill slender, usually distinctly notched, and with distinct rictal bristles. Tarsi booted; i. e., the anterior covering undivided for the greater part of its length. Young, distinctly spotted.

All the North American Turdidæ have the wing more than three inches long, and may thus be readily distinguished from members of the most nearly related family, the Sylviidæ.

The American Turdidæ include two strongly marked sub-families, which may be distinguished as follows:—

Turdinæ. Gonys more than one third as long as the commissure.
Myadestinæ Gonys less than one third as long as the commissure.

Subfamily **TURDINÆ**.—The True Thrushes.

Analysis of GENERA.

a.[1] Wing less than five times as long as tarsus.
  b.[2] First primary not reaching beyond tips of primary coverts. Tail without rufous patch at base.
    c.[1] Tarsus not longer than middle toe with claw..... **Hesperocichla.**
    c.[2] Tarsus decidedly longer than middle toe with claw.
      d.[1] Second quill shorter than fourth. Tail without white at base.
        e.[1] Tail less than three times as long as the tarsus.....**Turdus** (*Hylocichla*).
        e.[2] Tail more than three times as long as the tarsus.....**Merula.**
      d.[2] Second quill not shorter than fourth. Tail white at base .....**Saxicola.**
  b.[2] First primary reaching beyond tips of primary coverts. Tail with rufous patch at base.....**Cyanecula.**
a.[2] Wing more than five times as long as the tarsus.....**Sialia.**

Of the above genera, only *Turdus*, *Merula*, and *Sialia* are, so far as known, represented in the Illinois fauna. The typical species of *Turdus* are exclusively Old World, a single one (*T. iliacus* Linn.) occurring accidentally in Greenland. All the American species belong to a very strongly marked subgenus, or perhaps genus, *Hylocichla*, which differs from *Turdus* proper in the much more lengthened tarsus, and other characters.

Genus TURDUS Linnæus.

Subgenus Hylocichla Baird.

Hylocichla Baird, Review Am. B., i., 1864, 12. Type, *Turdus mustelinus* Gmel.

The essential characters of the subgenus *Hylocichla* consist in the much lengthened tarsus, proportionally shortened tail, and small size. The group comprises the small North American "Wood Thrushes," which are closely connected on the one side with *Catharus*, by their lengthened tarsi, and with *Turdus* by the shape of the wing. The bill is shorter, more depressed, and broader at base than in typical *Turdus*, so much so that the species have frequently been described under *Muscicapa*.

It is not at all improbable that naturalists may ultimately conclude to consider the group as of generic rank, as has already been done in some instances.

As to their general appearance when seen in the forest, the Hylocichlæ, with the exception of the Wood Thrush, which is conspicuously larger and more rich in color than its congeners, are much alike in their general appearance and in their habits. As has been truly said by a discriminating observer,* their general resemblance to one another is so close "that none but experts can distinguish them, though, upon a close examination the characteristics of each are found to be marked with sufficient distinctness to leave no doubt of their identification. In the field all three [*i. e. fuscescens*, *swainsonii*, and *pallasii*] have the same outline from beak to tail, the same russet coloring above and the same dull white breasts, more or less spotted; but lay examples of each side by side and it will be proven that the Tawny was correctly named, for his russet plumes have a reddish tint in marked contrast with the greenish shade of the Olive-backed, while the Hermit is distinguished by his tawny tail which changes to olive above the rump. But the actions of these birds are more nearly identical than either form or color, for whether seen hopping along the ground or perched upon a tree, feeding or flying, it is impossible to detect any difference in them."

*Mr. Montague Chamberlain, in the *Canadian Sportsman and Naturalist*, Vol. III., No. 1, January, 1883, pp. 201-203.

Key to the species of Eastern North America.

COMMON CHARACTERS.—Above plain brown; beneath white, more or less spotted with brown or dusky. *Young*, with the upper parts, including wing-coverts, spotted and streaked with yellowish fulvous.

a^1. Sides distinctly spotted, as well as the breast; culmen, .70 or more, and wing usually more than 4.25.

1. T. mustelinus. Above cinnamon-brown, brighter and more rufous on the crown, more olive on the tail; beneath, including the sides, white, the breast and sides marked with roundish or inversely cordate spots of black. Wing 4.10–4.50, tail 3.00–3.30, culmen .70–.75, tarsus 1.20–1.30, middle toe .70–.75.

a^2. Sides uniform grayish or brownish, without distinct spots; jugulum, etc., more or less tinged with buff. Culmen .60 or less, and wing usually less than 4.25.

b^1. Second primary shorter than fifth, the fourth longest. Tail and upper coverts rufous, in decided contrast with the olive of the back, etc. A distinct buff orbital ring.

2. T. aonalaschkæ pallasii. Jugulum with very large triangular spots of dusky. Wing 3.40–3.90 (3.64), tail 2.55–3.15 (2.82), culmen .50–.60 (.54), tarsus 1.15–1.30 (1.19), middle toe .65–.75 (.70).

b^2. Second primary much longer than fifth, the third longest. Tail and upper coverts, not noticeably different in color from the other upper parts.

c^1. *A distinct buff orbital ring.*

3. T. ustulatus swainsonii. Above uniform olive, of variable shade, the outer surface of the wings (and sometimes the tail also), very slightly browner, or less olive, than the back. Jugulum bright buff with rather large triangular spots of dusky. Wing 3.80–4.10 (3.96), tail 2.80–3.10 (2.95), culmen .50–.55 (.52), tarsus 1.05–1.18 (1.10), middle toe .65–.72 (.69).

c^2. *No trace of light orbital ring.*

4. T. aliciæ. Very similar to *H. ustulatus swainsonii*, but buff of jugulum, etc., usually very much paler, and buff orbital ring wholly absent, the whole side of the head nearly uniform grayish.

α *aliciæ.* Wing 3.75–4.40 (average 4.07), tail 2.95–3.40 (3.09), culmen .45–.58 (.55), tarsus 1.12–1.30 (1.18), middle toe .60–.75 (.68).

β *bicknelli.* Wing 3.40–3.80 (average 3.65), tail 2.60–2.70 (2.75), culmen .39–.52 (.51), tarsus 1.10–1.25 (1.13), middle toe .65–.70 (.68). Bill more slender, and colors usually darker.

5. T. fuscescens. Above uniform fulvous-brown or tawny, jugulum creamy buff, marked with small cuneate spots or streaks of brown, somewhat darker than the crown. Two races, as follows:

α *fuscescens.* Above light fulvous-brown, or tawny; jugulum creamy buff with narrow cuneate markings of brown, scarcely darker in tint than the upper parts. Wing 3.75–4.15 (3.90), tail 2.70–3.30 (2.96), culmen .52–.60 (.55), tarsus 1.05–125 (1.15), middle toe .65–.72 (.69). (The prevalent eastern form.)

β *salicicolus.* Above russet-olive, jugulum very pale buff, with cuneate markings of dark brown. Wing 3.80–4.25 (4.02), tail 2.95–3.40(3.20), culmen .55–.60 (.57), tarsus 1.15–1.28 (1.17), middle toe .65–.75 .69). (Rare straggler from the Rocky Mountains).

Turdus mustelinus (Gmel.)

WOOD THRUSH.

Popular synonyms.—Bell Thrush; Bell Bird; Wood Robin; Grive des Bois and Merle tanné (Canadian French).

Turdus mustelinus GMEL. S. N. i, 1788, 817.—NUTT. Man. i, 1832, 343.—AUD. Orn. Biog. i, 1832, 372; v, 1839, 446, pl. 73; B. Am. iii, 1841, 24, pl. 144.—BAIRD, B. N. Am. 1858, 212; Cat. N. Am. B. 1859, No. 148; Review, 1864, 13.—COUES, Key, 1872, 72; Check List, 1873, No. 3; 2d ed. 1882, No. 6; B. N. W. 1874, 2.—B. B. & R. Hist. N. Am. B. i, 1874, 7, pl. 1, Fig. 1.

Turdus (Hylocichla) mustelinus COUES, B. Col. Val. 1878, 28.

Hylocichla mustelina RIDGW. Proc. U. S. Nat. Mus. iii, 1880, 166; Nom. N. Am. B. 1881, No. 1.

Turdus melodus WILS. Am. Orn. i, 1808, 35, pl. 2, Fig. 1.

HAB. Eastern United States and British Provinces in summer, breeding throughout. In winter, Mexico, Guatemala, Cuba, and Bermudas.

SP. CH. Above bright tawny cinnamon-brown, more rufescent anteriorly, more grayish posteriorly; auriculars streaked white and dusky. Lower parts white, the breast and sides with large blackish spots.

Adult in summer: Above cinnamon-brown, becoming bright tawny rufous on the head, the color clearer and somewhat lighter on the cervix; wings less reddish than the back, rump still more olivaceous, and tail decidedly grayish brown. A pure white orbital ring; lores grayish white, more gray immediately in front of the eye; auriculars dusky, distinctly streaked with whitish. A white malar stripe, curving upward beneath the auriculars, the anterior portion speckled with dusky. Entire lower parts white, usually somewhat tinged with buff on the breast; sides of throat bounded by a stripe of aggregated blackish cuneate streaks; jugulum marked with distinct cuneate or deltoid, the breast and sides with larger, broader, inversely cordate, spots of black; abdomen and crissum immaculate; throat with very few minute spots, or entirely immaculate. Bill dark horn-color, the basal half of the mandible paler; iris dark brown; tarsi and toes pale brown. Wing 4.10—4.50; tail, 3.00—3.30; culmen, .70—.75; tarsus, 1.20—1.30; middle toe, .70—.75.

Adult in winter: Similar, but jugulum more decidedly tinged with buff.

Young, first plumage: Similar to the adult, but feathers of the pileum and back with paler (ochraceous) shaft-streaks; middle wing-coverts with terminal triangular spots of ochraceous, the greater coverts narrowly tipped with the same; spots on breast, etc., less sharply defined.

Specimens of this species vary considerably in the intensity of the color of the upper surface, the variation involving both the rufous of the anterior and the grayish brown of the posterior portions. Beneath, the jugulum is occasionally without any buff tinge whatever, while in some spring specimens this color is quite as evident as in most autumnal or winter examples. The spots on the breast and sides also vary much in size and exact shape, being larger and more rounded in some, smaller and narrower in others; in some specimens they are deep black, in others decidedly brownish. Extreme variations, however, in this respect, appear to be purely individual, and not at all dependent on locality.

Although a common species throughout the temperate portions of eastern North America, the Wood Thrush cannot be said to be a well-known bird in the same sense as the Robin, Catbird, or other more familiar species; but to every inhabitant of rural districts his song, at least, is known, since it is of such a character that no one with the slightest appreciation of harmony can fail to be impressed by it.

The song of the Wood Thrush is of a richer, more melodious tone than, perhaps, that of any other North American bird; and, did it possess continuity, would be incomparable. It is one of the few birds which the Mocking-bird cannot imitate—he cannot even approach the liquid metallic melody of the Wood Thrush's tones. Yet, just as the hearer becomes an attentive listener the beautiful notes cease with disappointing abruptness.

The favorite haunts of the Wood Thrush are damp woodlands and shaded dells, but he has on a few occasions been known to take up his abode in wooded parks within large cities. It is not often, however, that he is to be met with away from the wild-wood, where, however, he is by no means shy.

The nest of this species is usually built upon a horizontal branch of a low tree, usually from six to ten—rarely fifteen—feet from the ground. It is a firm, compact structure, with much mud in its composition. The eggs are from three to five, but usually four, in number, and are of a uniform greenish blue color, thus, as does also the nest, closely resembling those of the Robin, except in size, being considerably smaller.

Turdus fuscescens Steph.

WILSON'S THRUSH.

Popular synonyms.—Tawny Thrush; Veery.

Turdus mustelinus Wils. Am. Orn. v, 1812, 98, pl. 43, fig. 3 (nec Gmel.).

Turdus fuscescens Steph. Shaw's Gen. Zool. x, 1817, 182.—Baird, B. N. Am. 1858, 214; Cat. N. Am. B. 1859, No. 151; Review, 1864, 17.—B. B. & R. Hist. N. Am. B. i, 1874, 9, pl. i, fig. 5.—Coues, Key, 1872, 73; Check List, 1873, No. 6; ed. 2, 1881, No. 7; B. N. W., 1874, 5; B. Col. Val. 1878, 39.

Hylocichla fuscescens Ridgw. Proc. U. S. Nat. iii, 1880, 166; Nom. N. Am., 1881, No. 2.

Turdus wilsoni Bonap. Jour. Phila. Ac. iv, 1824. 34.—Aud. Orn. Biog. ii, 1834, 362, pl. 164; Synop. 1839, 90; B. Am. iii, 1841, 27, pl. 145.

Merula minor Sw. & Rich. F. B. A. ii, 1831, 179, pl. 36.

Turdus brunneus Brewer, Jour. Bost. Soc. vi, 1852, 304.

Hab. Eastern United States and British Provinces; wintering in the Southern States and in Cuba, and breeding in the northern portions of its range. (Replaced in the Rocky Mountains by the allied race *T. fuscescens salicicolus*).

SP. CH. Above uniform, rather light fulvous brown, varying in precise shade; no trace of a lighter orbital-ring, the sides of the head being nearly uniform grayish, as in *T. aliciæ*. Jugulum and posterior portion of throat creamy buff, with cuneate spots of brown, usually a little darker than the color of the crown, these markings narrower and more distinct anteriorly; chin and upper part of throat, nearly white, immaculate, but bordered along each side by a longitudinal series of brown streaks, sometimes blended into a single stripe, below an ill-defined whitish or buffy malar stripe; lores pale grayish or grayish white; auriculars darker and more brownish. Sides of breast, sides, and flanks, light brownish gray, the sides of the breast sometimes faintly spotted with a deeper shade, but frequently uniform; tibiæ grayish white in front, brown on posterior side; rest of lower parts pure white. Bill dusky, the basal half of the mandible paler; iris dark brown; tarsi pale brown (in skin), toes darker. Wing 3.75–4.15 (3.95); tail 2.70–3.30 (3.02); tarsus 1.05–1.25 (1.15); middle toe .65–.72 (.69); culmen (exposed portion) .52–.60 (.56).*

In summer, the colors paler; *in fall and winter*, the brown above brighter, the buff of jugulum deeper, and spots darker.

"*First plumage:* female. Above bright reddish-buff, deepest on back and rump; feathers of pileum, nape, back, and wing-coverts margined with dark brown, confining the lighter color to somewhat indefinitely defined central drop-shaped spots. Lores and line from lower mandible along sides of throat, dark sooty-brown; throat, sides and abdomen pale brownish-yellow with indistinct transverse bands of brown; breast deep buff, each feather edged broadly with dull sooty-brown; anal region dirty white. In my collection, taken in Cambridge, Mass., July 23, 1874." (BREWSTER, Bull. Nutt. Orn. Club, January, 1878, p. 18.)

Specimens vary a great deal in the precise shade of brown on the upper parts, which, however, is always decidedly more fulvous or tawny than in any other species, while there is also much variation in the depth of the buff color and the distinctness of the spots or streaks on the jugulum and sides of throat; the latter are occasionally, but rarely (as in No. 63058 ♂, Massachusetts, and 2145 ♂, Pennsylvania), very small and no darker in color than the upper parts.

Wilson's Thrush is a common enough bird of the northern United States, but south of the parallel of 40° it is known only as a migrant, or winter resident, and on the Alleghanies, where, at the proper altitude it spends the summer. According to Dr. Brewer (*Hist. N. Am. B.*, I, p. 10) "it is timid, distrustful, and retiring; delighting in shady ravines, the edges of thick, close woods, and occasionally the more retired parts of gardens."

The song of this Thrush is so very delicate and wiry that the hearer must be near by to catch all the subtle quavers and trills which are its characteristics. Dr. Brewer says it "is quaint, but not unmusical; variable in its character, changing from a prolonged and monotonous whistle to quick and almost shrill notes at the close. Their melody is not unfrequently prolonged until quite late in the evening, and, in consequence, in some portions of Massa-

*Extreme and average measurements of 16 adults.

chusetts these birds are distinguished by the name of Nightingale,—a distinction due rather to the season than to the high quality of their song."

This estimate of the song of the Tawny Thrush is shared by Mr. Chamberlain, who says (l. c.) that "the Veery displays the least musical ability yet his simple strain is exceedingly pleasant to the ear and his beautiful voice exhibits most strongly that peculier resonant metallic tone which is characteristic of the genus."

The nest is placed on or near the ground, resting on a thick mat of dry leaves, and is without mud in its composition. The eggs are four or five in number, of a bluish green color, usually immaculate, but in very rare cases finely speckled with brown.

Mr. H. K. Coale's notes regarding this species as observed by him in the vicinity of Chicago, are to the effect that it is a rather common migrant, but not often seen, on account of its shyness, and that it is generally found in clearings, in company with Towhee Buntings.

Turdus fuscescens salicicolus (Ridgw.)

WILLOW THRUSH.

Popular synonym.—Rocky Mountain Veery.

Turdus fuscescens BAIRD, B. N. Am. 1858, 922, 927 (Ft. Bridger, Wyoming).—ALLEN, Bull. M. C. Z. iii, 1872, 155, 173 (Mts. of Colorado).—RIDGW. Bull. Essex Inst. 1873, 172 (Salt Lake Valley, Utah); Bull. Essex Inst. 1873, 179 (Colorado); *ib.* 1875, 35 (Provo R., Utah); Orn. 40th Paral. 1874, 398 (valleys of Bear, Provo, and Weber R's, Utah; breeding).—HENSHAW, Ann. Lyc. N. Y. xi, 1874 (Utah); Rep. Wheeler's Exp. 1874, 39, 56, 71 (do.); Zoöl. Wheeler's Exp. 1875, 148 (Denver & Ft. Garland, Colorado; breeding).—COUES, B. N. W. 1874, 5 (part).

Turdus (Hylocichla) fuscescens COUES, B. Col. Val. 1878, 39 (part).

Hylocichla fuscescens salicicola RIDGW. Pr. U. S. Nat. Mus. vol. 4, Apr. 10, 1882, 374.

Turdus fuscescens salicicolus COUES, 2d Key, 1884, 246.

HAB. Rocky Mountain region, west to the Salt Lake Valley; wintering in eastern Mexico (and southward?). Accidental fall straggler to Illinois (Chicago, Sept. 16, 1877, H. K. Coale.

CH.—Similar to *T. fuscescens*, but averaging decidedly larger, the upper parts much less tawny, and the jugulum less distinctly buff. Wing 3.80–4.25 (4.02); tail 2.95–3.40 (3.20); culmen .55–.60 (.57); tarsus 1.15–1.28 (1.17); middle toe .65–.75 (.69).*

Adult in spring: Above uniform russet-olive (much as in *T. ustulatus*); jugulum and lower part of throat pale buff, as in *ustulatus*, much lighter than in *fuscescens*, the markings, however, small and narrow as in the latter. Sides of head dull grayish, without trace of lighter orbital ring; sides of breast, sides, and flanks ash-gray (rather deeper than in *fuscescens*), the breast very faintly or not at all spotted with darker.

* Extreme and average measurements of 11 adults.

Adult in fall and winter: Above darker, more umber, brown; jugulum and lower part and sides of throat deeper buff, with much darker spots.

The general appearance of this bird at first glance is more that of *T. ustulatus* than true *T. fuscescens*, the upper parts and anterior lower parts being quite similarly colored. A close examination, however, immediately reveals radical differences, the most important of which is the total absence of any light orbital ring, which is always present, and very distinct, in *ustulatus*. The wings and tail, instead of being appreciably more rufescent than the back and rump are, on the other hand, less so; the buff of the jugulum gives way very abruptly to the ash-gray on the sides of the breast, and the spots end quite as abruptly, the breast being plain ash-gray laterally, and white medially, with very indistinct spots of grayish between the white and the gray. In *ustulatus* the sides are decidedly brown, with very distinct transverse spots of a darker shade of the same color entirely across the breast. Another excellent character consists in the color of the axillars and lining of the wing, which are light grayish in the present bird, and deep brownish buff in *ustulatus*.

The differences from typical *fuscescens* of the Atlantic States, as indicated in the above diagnosis, are exceedingly constant.

A specimen from Chicago, Ill., in the collection of H. K. Coale, of that city, (No. 1568, Coll. H. K. C., Sept. 16), is referable to this race, and is evidently a fall straggler from the Rocky Mountain district. It is even more olive above than most specimens from that region, having almost exactly the same shade of color as a fall specimen of *T. swainsonii* from Massachusetts, the latter, however, an unusually brown example. The entire absence of any light orbital ring, the narrow, almost linear, streaks of the jugulum, and the peculiar proportions, however, refer it at once to *fuscescens*.

This form was named *salicicolus* on account of its marked predilection for willow thickets, to which, along the streams in the valleys and lower cañons of the Rocky Mountain region, it is chiefly confined during the breeding season.

The Willow Thrush is a purely accidental visitor to the country east of the Mississippi River, its occurrence in Illinois resting upon the capture of a single specimen in Chicago, by Mr. Henry K. Coale, September 16, 1877, as noted above. (See "Nuttall Bulletin," Oct., 1883, p. 239.)

This strongly marked race is decidedly distinct from its eastern representative in both habits and song, the latter being far finer.

Turdus aliciæ Baird.

GRAY-CHEEKED THRUSH.

Popular synonym. Alice's Thrush.

Turdus aliciæ Baird, B. N. Am. 1858, 217; ed. 1861, pl. 81. fig. 2; Cat. N. Am. B. 1859, No. 154; Review, 1864, 21.—B. B. & R. Hist. N. Am. B. i, 1874, ii, pl, i. fig. 3.

Turdus swainsoni var. *aliciæ* Coues, Key, 1872, 73; Check List, 1873, No. 5*a*.

Turdus swainsonii b. *aliciæ* Coues B. N. W. 1874, 4; B. Col. Val. 1878, 35.

Turdus ustulatus aliciæ Coues, 2nd Check List, 1882, No. 12.

Hylocichla aliciæ Ridgw. Proc. U. S. Nat. Mus. iii. 1880, 166; Nom. N. Am. B. 1880, No. 3.

Hab. Arctic and subarctic America in summer, from Labrador to Alaska (Pacific coast); passing through the eastern United States during migrations, and wintering in Central America, south to Colombia: eastern Siberia.

Sp. Ch. Above uniform greenish olive-brown; *no trace of light orbital ring*. Beneath white usually more or less tinged with buff on the jugulum, the sides uniform olive-gray. Jugulum with lower parts and sides of throat marked with rather small triangular spots of dusky. Wing, 3.85-4.40 (4.18); tail, 2.85-3.25 (3.05); culmen, .50-.58 (.54); tarsus, 1.15-1.25 (1.19); middle toe, .65-.72 (.69).*

Adult in Spring. Above uniform greenish olive-brown, the tail and outer portion of wings sometimes appreciably browner, or less greenish; sides of head nearly uniform dull grayish, the auriculars faintly streaked with white. Malar region and lower parts in general, white, the entire sides uniform olive-gray, and the jugulum usually (but not always) more or less tinged with light buff; jugulum, with lower part and sides of throat, marked with rather small but very distinct deltoid spots of dusky, these markings more cuneate anteriorly, and forming a nearly continuous submalar stripe along each side of throat, the extreme posterior spots decidedly transverse; breast marked with transverse spots of olive-gray, like the color of the sides. Bill black, the basal half of the mandible pale colored (dull flesh-color in life); interior of mouth bright yellow; tarsi and toes pale brown or horn-color, the toes usually darker.

Adult in fall and winter. Similar, but usually more greenish olive, and the buff tinge on jugulum more distinct.

Turdus aliciæ is apparently a very near ally of *T. fuscescens*, with which it agrees much more closely in measurements and in pattern of coloration, than with *T. ustulatus swainsonii* with which it has usually been compared, and, by many confused, though needlessly so. From the latter it may be invariably distinguished by the entire absence of a light orbital ring, the whole side of the head being nearly uniform grayish, as in *fuscescens*. The spots on the jugulum average decidedly smaller; the jugulum and malar region are much less distinctly buff; the sides much grayer, etc. Some specimens of *aliciæ* and *swainsonii* are identical in the color of the upper parts,

*Extreme and average measurements of 38 adults.

but a large majority of the former species are decidedly darker and less brown, appearing on actual comparison almost gray in contrast.

There is the usual range of individual variation in this species, affecting not only the color but the proportions also; but I have been unable to discover any variation with locality, although specimens from the far North, being in midsummer dress, are paler and grayer than specimens from the United States obtained in spring or autumn, and therefore in fresher plumage.

First described in 1858 from specimens obtained at West Northfield, Illinois, by Miss Alice Kennicott, and near Cairo by her brother, the lamented Robert Kennicott, this species remained for several years rare in collections and its distribution comparatively unknown; but at the present time its habits and range are known perhaps as exactly as those of any of its congeners. Everywhere within the United States the typical form is merely a migrant, although a small southern race passes the summer on the higher mountains of the extreme northeastern portions of the country; but of the latter it may be best to treat specially under its appropriate heading. (See *T. aliciæ bicknelli*, page 59).

The breeeding range of the Gray-cheeked Thrush includes a vast extent of territory, from the bleak regions of Labrador to the shores of the Arctic Ocean and westward to the coasts of Behring's Sea, including those of the Asiatic as well as the American side.

In its general habits, this species much resembles its congeners, being, perhaps, most like *T. ustulatus swainsonii*, although its relationship to *T. fuscescens* are in some respects equally close. The eggs are spotted, like those of the Olive-backed Thrush, however, and not plain colored as are usually, but not invariably, those of the Tawny. The notes are said to be quite distinctive, the song being most like that of the Hermit Thrush, "but differs in being its exact inverse," beginning with its highest and concluding with its lowest notes, instead of the reverse.

Turdus aliciæ bicknelli (Ridgw.)

BICKNELL'S THRUSH.

Hylocichla aliciæ bicknelli Ridgw. Pr. U. S. Nat. Mus. Vol. 4, Apr. 10, 1882, 377.—Bicknell, Bull. Nutt. Orn. Club, July, 1882, pp. 152–159 (habits).—Brewster, *ib.* Jan., 1883, pp. 12–17 (critical).

Turdus aliciæ bicknelli Coues, 2d Key, 1884, 248.

Hab. Higher mountains of the northeastern United States, from the Catskills and Adirondacks, in New York, to the White mountains of New Hampshire; breeding from an elevation of 4,000 feet upward. Straggler to Illinois (Warsaw, May 24, 1884; Chas. K. Worthen).

Subsp. char. Similar to *Turdus aliciæ* Baird, but much smaller and (usually) with the bill more slender. Wing, 3.40–3.80 (3.65); tail, 2.60–2.90 (2.75); culmen, .50–.52 (.51); tarsus, 1.10–1.25 (1.13); middle toe, .65–.70 (.68).

The seven specimens upon which this new race is based are uniformly very much smaller than true *T. aliciæ*, with slenderer bills, and present also certain slight but rather indefinite peculiarities of coloration. After a very careful comparison, however, I am unable to find any constant color-differences which can be expressed in a diagnosis. Some specimens, notably the two males from Slide Mountain (where Mr. Bicknell found the present bird breeding in company with *T. ustulatus swainsonii* and *T. aonalaschkæ pallasii*, and having very distinctive habits and notes as compared with the two species in question), have the upper parts much browner than in *aliciæ*, with the wings and tail appreciably more reddish. In fact, the general aspect of the upper parts approaches more closely that of *T. ustulatus*, but the shade is much darker and less fulvous, while, as in typical *aliciæ*, there is no trace of a lighter orbital ring. The bill is much more slender than in most specimens of the larger form, while in several examples it is of a very peculiar shape, being much depressed basally, with the middle portion of the culmen somewhat concave. In fact, the bill in these specimens is much like that of the Nightingale (*Luscinia philomela*) in shape, but with even a more prominent angle at the base of the gonys, and still more depressed at the base. The extreme form of the bill, in this respect, as exhibited in No. 653 (coll. E. P. B.), suggests very strongly that of a Dipper, or Water Ouzel (*Cinclus*) in miniature.

This newly discovered race, was first obtained on the Catskill Mountains by Mr. Eugene P. Bicknell, to whose kindness I am indebted for the privilege of describing it. Mr. Bicknell found it breeding on Slide Mountain, at an elevation of 4,000 feet, and made careful observations on its habits, which were recorded in the "Nuttall Bulletin" for July, 1882, pp. 152–159.

A single specimen was obtained at Warsaw, Illinois, on the 24th of May, 1884, by Mr. Chas. K. Worthen, thus considerably extending its known range and adding it to the fauna of this State.

Turdus ustulatus swainsonii (Cab.)

OLIVE-BACKED THRUSH.

Popular synonyms.—Swainson's Thrush; Swamp Robin (New England).

Turdus swainsonii CABAN. Faun, Per. 1845-46, 187.—BAIRD, B. N. Am. 1858, 216; Cat. N. Am. B. 1859, No. 153; Review, 1864, 19.—COUES, Key, 1872, 72; Check List, 1872, No. 5; B. N. W. 1874, 4; B. Col. Val. 1878, 34.—B. B. & R., Hist. N. Am. B. i, 1874, 14, pl. i, fig. 4.
Hylocichla ustulata swainsoni RIDGW. Proc. U. S. Nat. Mus. iii., 1880, 166; Nom. N. Am. B. 1881, No. 4*a*.
Turdus ustulatus swainsoni COUES, 2d Key, 1884, 248.

HAB. Eastern North America, including the Rocky Mountain district, west to the border of the Great Basin; breeding in the British Provinces and far southward in the Rocky Mountains; wintering in southern Union States,* Central America and various parts of South America (Ecuador, Peru, Brazil, etc.).

SP. CH. *Adult.* Above uniform olive-brown, more grayish in some examples; a very distinct orbital ring of buff; supraloral stripe, malar region, chin, throat, and jugulum, light buff, usually deepest toward sides of head and neck. Jugulum thickly marked with very broad triangular spots of dusky brown (much darker than the color of the crown), these markings more cuneate anteriorly, and continued along sides of the throat in a series of longitudinal dashes, usually blended into a more or less continuous submalar stripe, narrower and unbroken anteriorly; chin and upper part of throat immaculate; sides of breast, sides, and flanks, olivaceous-gray; rest of lower parts pure white; breast marked with distinct transverse spots of deep brownish gray; tibiæ light brownish gray. Axillars and lining of wing deep grayish fulvous, mixed with ochraceous. Bill dusky, basal half of mandible pale (dull flesh-color in life); interior of mouth rich yellow (in life); iris dark brown; tarsi and toes pale brownish, the latter darker. Length, 7.—7.50; extent of wings, 11.50—12.25; wing, 3.80—4 10 (3.96); tail, 2.80—3.10 (2.95); culmen, .50—.55 (.52); tarsus, 1.05—1.18 (1.10); middle toe, .65—.72 (.69).†

"*First plumage:* Male. Above much darker than adult, each feather, excepting on rump and tail-coverts, with a tear-shaped spot of rich buff; beneath like adult, but rather more darkly and thickly spotted on the breast, and with narrow terminal bands of dull black on the feathers of the lower breast and sides. From a specimen in my collection shot at Upton, Me., August 4, 1874." (BREWSTER, Bull. Nutt. Orn. Club, Jan., 1878, p. 18.)

Among a large series of specimens there is much variation in the precise shade of color of the upper parts, some being much grayer than others. As a rule, examples from the Rocky Mountains are appreciably grayer than those from the East, and in the case of two or three the difference is very decided; but after a careful comparison I find that that the difference is not sufficiently constant to warrant varietal distinction, especially since the measurements of the two series coincide very closely.‡

* The only record the author has seen is that of Mr. W. W. Cooke, in the *Ornithologist and Oologist*, for December, 1883, p. 89, to the effect that this species has been found wintering in the Mississippi bottom, Illinois.

† Extreme and average measurements of 14 examples.

‡ A series including 5 males and 2 females from the Eastern States and Rocky Mountains average as follows:

	Wing.	Tail.	C'lmen	Tarsus	M. toe.	
Eastern specimens....	3.96	2.92	.52	1.12	.69	Seven specimens measured.
Western "	3.96	2.98	.52	1.09	.69	" " "

A specimen said to be from San Francisco (No. 39468; F. Bischoff) agrees exactly with eastern specimens. There may be an error in the locality, or it may be an accidental straggler.* Three specimens from the Yukon region in Alaska (50146, Kamensichta, May 31, W. H. Dall; 73227, Ft. Yukon, June 22, L. M. Turner; and 81106, Anvik, lower Yukon, May or June, E. W. Nelson), are more grayish, like Rocky Mountain examples.

Extralimital specimens are from Tehuantepec, Guatemala, Costa Rica, and Ecuador (55335, Archidona, Rio Napo; Orton). They agree entirely with North American specimens.

The Olive-backed Thrush, or "Swamp Robin" as it is familiarly known in New England, is another of the species which in most parts of the United States where it is found occurs simply as a migrant. It breeds from northern New England north well into the more southern parts of the region inhabited by *T. aliciæ*, both species often breeding in the same localities and yet each retaining its special characteristics of habits and notes—a fact sufficient to at once dispose of any theory of their representing races of one species. In the higher mountains, this species breeds far southward, Wilson having found its nest and eggs on the high lands of northern Georgia, while in the Rocky Mountains of Colorado Mr. Henshaw found it abundant, in May, in the vicinity of Fort Garland.

The song of this species, according to the writer's experience in the mountains of Utah, is simple and brief, but very sweet, though less so than that of either *T. fuscescens salicicolus* or *T. aonalaschkæ*.

Mr. H. K. Coale informs me that several specimens shot in May, 1883, were about a dead cow, where they had probably been attracted by the supply of maggots.

The nest of the Olive-backed Thrush is usually built in bushes or low trees, near or along the banks of streams. Those found by the writer in the mountains of Utah† were in willows overhanging or growing very near to the banks of a mountain brook at heights varying from three to ten, but usually about seven, feet from the ground. In no instance were there more than four eggs in a nest. The composition of the nest of this species (as built in New Brunswick) is thus described by Mr. Chamberlain:‡ "In a specimen of this nest before me coarse grass is the predominating material in

* The "make" of this skin is precisely that of specimens prepared by the same collector at Peoria, Illinois.

† Ornithology of the 40th Parallel, pp. 397, 398.

‡ Canadian Sportsman and Naturalist, Jan., 1883, p. 20.

the external parts, but in the walls twigs of spruce, bits of lichens and dried leaves are mixed with the grass and all are woven into a solid mass, very firm and strong. The lining is formed by a layer of fine grass interwoven with pieces of a black, vine-like root, all neatly laid; over these, at the bottom, is a layer of skeleton leaves. The measurements are: Depth, inside, $1\frac{7}{8}$ inches; width at mouth, $2\frac{3}{4}$ inches; outside, the diameter is irregular, varying from $4\frac{1}{2}$ to 5 inches. Mr. J. W. Banks tells me that of some fifty nests of the Olive-backed Thrush that he has examined all were lined with skeleton leaves; but Mr. Harold Gilbert found one in 1878 that was lined with moose hair. This nest was built in a garden, in the suburbs of St. John, within twenty feet of the house and but an arm's-length from one of the main walks. The moose hair was furnished by a tame animal kept on the grounds."

Turdus aonalaschkæ pallasii (Cab.)

HERMIT THRUSH.

Popular synonyms.—Eastern Hermit Thrush; Rufous-tailed Thrush; Swamp Robin, or Ground Swamp Robin (New England); Solitary Thrush.

Turdus solitarius (not of Linn.) Wils. Am. Orn. v, 1812, 95 (not pl. 43, fig. 2, which= *swainsoni*).—Aud. Synop. 1839, 91; B. Am. iii, 1841, 29, pl. 146.

Merula solitaria Sw. & Rich. F. B. A. ii, 1831, 184, pl. "35" (=37).

Turdus minor (not of Gm.) Nutt. Man. i. 1832, 346.—Aud. Orn. Biog. i. 1832, 303, pl. 58.

Turdus pallasii Caban. Wiegm. Archiv. 1847, i. 205.—Baird, B. N. Am. 1858, 212; Cat. N. Am. B. 1859, No. 149; Review, 1864, 14.—Coues, Key, 1872, 72; Check List, 1873, No. 4; B. N. W. 1874, 2; B. Col. Val. 1878, 20.—B. B. & R. Hist. N. Am. B. i. 1874, 18, pl. i, fig. 6.

Turdus aonalaschkæ pallasi Ridgw. Proc. U. S. Nat. Mus. Vol. iii, March 22, 1880, 1.

Hylocichla unalascæ pallasi Ridgw. Proc. U. S. Nat. Mus. iii, 1880, 166. Nom. N. Am. B. 1880, No. 5*b*.

Turdus unalascæ nanus Coues, 2d Check List, 1882, No. 10.

Hab. Eastern North America, breeding chiefly north of the United States and wintering in the more southern States, or from about the parallel of 40° to the Gulf coast. Represented in western North America by the allied races *auduboni* (Rocky Mountain district) and *aonalaschkæ* (Pacific coast).

Sp. Ch. Second primary shorter than fifth. Tail much more reddish than back. Wing, 3.40–3.90 (3.64); tail, 2.55–3.15 (2.88); culmen, .50–.60 (.54); tarsus, 1.15–1.30 (1.19); middle toe, .65–.75 (.70).*

* Extreme and average measurements of 24 adults. The average of 32 adults measured by Mr. Henshaw (*cf.* Bull. Nutt. Orn. Club) is slightly different, being, wing, 3.61; tail, 2.87; culmen, .53; tarsus, 1.15. Though the sexes are not constantly different in dimensions, the ♀ is usually a little the smaller, as the following averages of 16 males and 8 females will show:

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
Males	3.71	3.00	.55	1.21	.70
Females	3.57	2.77	.53	1.17	.70

Adult in spring and early summer. Above uniform olive-brown, changing to dull cinnamon-rufous on the tail, the upper tail-coverts of an intermediate tint; outer portion of the wings more rusty than the back, but much less rufous than the tail. A very distinct orbital ring of pale buff; auriculars and suborbital region dull grayish brown, indistinctly streaked with paler. Lower parts dull white, purer on the abdomen, the jugulum usually faintly tinged with buff; jugulum marked with large deltoid spots of dark brown or blackish, the more posterior of these spots broader and less pointed, the anterior ones more cuneate; sides of the neck with cuneate streaks of dark brown or blackish, narrower and more linear anteriorly, where they form a well defined stripe or "bridle" along each side of the throat; malar region dull white, indistinctly speckled or streaked with brown; breast with distinct roundish or somewhat saggitate spots of deep grayish brown; sides and flanks light grayish olive-brown, axillars and lining of wing pale dull ochraceous; tibiæ olive-brown.

Adult in fall and winter. Similar, but above much browner (almost umber on the back), the tail deeper rufous, the jugulum more distinctly tinged with buff, and the sides browner olive.

"*First plumage: female.* Remiges and rectrices as in adult, but darker and duller; rump and tail-coverts bright rusty-yellow; rest of upper parts, including wing-coverts dark reddish brown, each feather with a central tear-shaped spot of golden-yellow; entire under parts rich buff, fading to soiled white on abdomen and anal region; each feather on jugulum and breast broadly tipped with dull black, so broadly, indeed, that this color covers nearly four-fifths of the parts where it occurs; rest of under parts, with exception of abdomen and crissum, which with the central region of the throat are immaculate, crossed transversely with lines of dull black. From a specimen in my collection shot at Upton, Me., June 20, 1873. This bird was very young,—scarcely able to fly, in fact,—yet the color of the rectrices is sufficiently characteristic to separate it at once from the corresponding stage of *T. swainsoni*, which it otherwise closely resembles. Another specimen of apparently nearly the same age, taken at Rye Beach, N. H., July 25, 1872, differs in having a decided reddish or rusty wash over the entire plumage, and by the spots on the breast being brownish instead of black." (BREWSTER, Bull. Nutt. Orn. Club, Jan., 1878, p. 17.)

Specimens vary a good deal in the precise shade of color on the upper parts, the relative blackness of the spots on the jugulum, the distinctness of the buff tinge to the latter region, and other minor details. In the spring or early summer plumage the color of the back is much that of *T. ustulatus swainsonii*, but is browner, or with less of an olive cast. In winter the back and crown are sometimes decidedly reddish brown, some specimens, (as Nos. 7591, Washington. D. C. and 54823, Enterprise, Florida, Feb. 1), being in fact even more rufescent than the Rocky Mountain form of *T. fuscescens*. The spots on the jugulum vary in form from decidedly cuneate to broadly deltoid, and in color from dark grayish brown to black.

An excellent treatise on the several geographical races of this species by Mr. H. W. Henshaw may be found in the "Nuttall Bulletin," for July, 1879, pp. 134–139.

The Hermit Thrush is a species of more general distribution than any other of the small thrushes, being found entirely across the continent and north to the arctic regions. It is not quite the same bird, however, in all parts of its range, the Rocky Mountain region

being occupied by a larger, grayer, race, while in the Pacific coast district a dwarf race takes its place. These two geographical forms being sufficiently distinct to rank as subspecies they need not be mentioned further here.

The "Ground Swamp Robin," as this species is known in parts of New England in contradistinction from its relative, the Olive-backed ed Thrush, (called "Swamp Robin") breeds from Massachusetts northward, and passes the winter from the Middle States, or from about the parallel of 40° to the Gulf coast. It has been found common in winter in vicinity of Washington, D. C., during the severest weather, the mercury registering -16°. Most of the habits of this species are very similar to those of its congeners. Its song is said by Dr. Brewer to be "very fine, having many of the characteristics of that of the Wood Thrush. It is as sweet, has the same tinkling sounds, as of a bell, but is neither so powerful nor so prolonged, and rises more rapidly in its intonations. It begins with low, sweet notes, and ends abruptly with its highest, sharp ringing notes."

Genus **Merula** Leach.

Merula Leach, Syst. Cat. Mamm. and Birds. 1816, p. 20. Type, *Turdus merula* Linn.

Gen. Char. Tail about four-fifths as long as the wing, and more than three times as long as the tarsus, slightly rounded; tarsus a little longer than commissure, exceeding middle toe and claw by less than the length of the latter; 3d, 4th, and 5th quills longest, the 2d about equal to the 6th, never much longer or shorter. 3d to 6th quills with outer webs sinuated. Outstretched feet not reaching beyond the middle of the tail. Plumage variable, but never distinctly spotted beneath, except in young. Sexes sometimes very different in plumage.

The above characters apply equally well to the type species, *M. merula* (the European Blackbird) and the North American representative congener, *M. migratoria*. The former, however, has the tail a little longer, proportionally, has the bill decidedly narrower at the base, and has the plumage uniform black in the male, grayish brown in the female.

North America possesses only two species of this genus, the common so-called Robin (*M. migratoria*) and the *M. confinis* (Baird) of Lower California, the latter being very distinct.

Merula migratoria (Linn.)

AMERICAN ROBIN.

Popular synonyms—Robin; Robin Red-breast; Migratory Thrush; Robin Thrush; Red-breasted Thrush; American or Carolina Fieldfare.

Turdus migratorius Linn. S. N. i, 1766, 292.—Wilson, Am. Orn. i, 1808, 35, pl. 2, fig. 2.—Nutt. Man. i, 1832, 338.—Aud. Orn. Biog. ii, 1834, 190, v, 1839, 442, pl. 131; Synop. 1839, 89; B. Am. iii, 1841, 14, pl. 142.—Baird, B. N. Am. 1858, 218; Cat. N. Am. B. 1859, No. 155; Review, 1864, 28.—Coues, Key, 1872, 71; Check List, 1873, No. 1; 2d ed. 1882, No. 1; B. N. W. 1874, i, 228; B. Col. Val. 1878, 8.—B. B. & R. Hist. N. Am. B. i, 1874, 25, pl. 2, fig. 3.

Merula migratoria Sw. & Rich. F. B. A. ii, 1831, 176.—Ridgw. Nom. N. Am. B. 1881, No. 7.

Hab. Breeding throughout northern and eastern North America, but more sparingly in the Southern States. Replaced in the western United States and high table-lands of Mexico by the allied race *M. migratoria propinqua*.

Sp. Ch. *Adult ♂ in summer:* Head deep black, with the lower eyelid, part of the upper eyelid, and a supra-loral streak, pure white; chin pure white, the throat streaked with the same. Upper parts grayish slate-color, the scapulars and interscapulars showing darker centers, these usually most conspicuous anteriorly; wing-coverts also darker centrally but this mostly concealed; primaries, primary-coverts, and alulæ, black, narrowly but distinctly edged with ash-gray. Tail uniform slate-black, the two outer feathers with inner webs distinctly tipped with white. Jugulum, breast, entire sides, upper part of abdomen, axillars, and lining of the wing, uniform deep rufous or reddish ochraceous (varying much in shade in different individuals); posterior part of abdomen and femoral region pure white; anal region and crissum white, mixed with plumbeous, this mostly beneath the surface. Bill, bright yellow, tipped with dusky; iris brown; tarsi and toes brownish black or dark horn-color—sometimes deep black. Total length 10.–11; extent 15.50–17.; wing, 8.10–5.40; tail, 4.10–4.50; culmen, 85–.92; tarsus, 1.30–1.40; middle toe, .82–.95.*

Adult ♀ in summer: Usually a little paler and duller in color than the male, but not always distinguishable. Bill less purely yellow; dimensions about the same.

Adult in winter: Upper parts decidedly tinged with olive; rufous feathers of the lower parts distinctly bordered with white, producing a scaly appearance. Bill mostly blackish, the yellow confined chiefly to the lower mandible.

Young in first winter: Differing from the autumnal or winter adult in much paler colors; head grayish, the pileum scarcely or not at all darker than the back, the upper parts being uniform dull gray; breast, etc., reddish ochraceous, much mixed with white posteriorly, the jugulum tinged with ashy. A more or less distinct supra-auricular streak of white.

Young in first plumage: Pileum and side of head dull blackish, with an indistinct dull whitish superciliary streak between; the lower eyelid also whitish. Upper parts dull brownish gray, the scapulars and interscapulars variegated with blackish terminal bars and whitish shaft-streaks; lesser and middle wing-coverts also marked with pale shaft-streaks. A whitish malar-stripe, bordered below by a blackish stripe along each side of throat; chin and throat white, immaculate, or with only very faint scattered specks. Breast, sides and abdomen, pale rufous or ochraceous, thickly spotted with black; lining of wings uniform ochraceous or pale rufous; posterior lower parts chiefly whitish.

*Extreme measurement of 9 adult males.

Among a large series of specimens, such as that contained in the U. S. National Museum, there is of course, a very considerable range of individual variation, but the extremes of normal variation are included in the general terms of the above diagnoses. The deepest-colored specimen in the series is an adult male obtained at Laurel, Maryland, April 3, 1879, (No. 82,539; H. Marshall). In this the dorsal feathers are all black, but distinctly bordered with slate-gray. All the wing feathers are decidedly black centrally, this showing very conspicuously on the tertials, while the primaries, with their coverts and alulæ are deep slate-back, narrowly, but very sharply edged with pale gray. The black of the head is very intense, while the black streaks on the throat, are much broader than the white ones. The lower parts are of a very rich, bright, uniform rufous. The bill, in the fresh specimen, was a pure, rich, golden-yellow, with the extreme tip black. This specimen I do not consider to be at all abnormal in the respects indicated, however, but believe that it represents merely the most perfect plumage of the fully adult male.

The palest colored individual is a female from the District of Columbia, obtained October 15 (No. 59,304; D. W. Prentiss), and in the plumage described above as that of the young in first autumn. The entire upper parts are a uniform ash-gray (slightly tinged with olive anteriorly), the feathers of the pileum darker centrally. The entire throat is white, very narrowly streaked with dusky. The breast and sides pale rufous, or bright reddish ochraceous, strongly shaded with ash-gray across the jugulum, and posteriorly broken into large spots by the broad white borders to the feathers.

The habits of the American Robin are too well known to require particular description. With many characteristics which of themselves should endear him to every lover of birds, he possesses certain bad qualities which have made him enemies. Seeking the society of man, he "outwears his welcome" by pilfering cherries and other small fruits with most provoking industry and pertinacity; and though a persistent singer during early morn, he delivers his sweet carol in a vacillating manner and quite spoils its effect by the interspersion of harsh, squeaky notes, while as the "evening shades deepen" his sharp complaining chirps annoy us by their too frequent repetition; and the twilight seems to make him all the more vociferous. However, "with all his faults, we love him still." No American orchard would be complete without its pair of Robins,

and his absence would create a void in the ranks of our birds, which would be felt by every one who cherishes memories of his boyhood days.

Genus SIALIA Swainson.

Sialia Swainson, Zoöl. Jour. iii, Sept. 1827, 173. Type, *Motacilla sialis* Linn.

"Gen. Char. Bill short, stout, broader than high at the base, then compressed; slightly notched at tip. Rictus with short bristles. Tarsi not longer than the middle toe. Claws considerably curved. Wings much longer than the tail; the first primary spurious, not one fourth the longest. Tail moderate; slightly forked. Eggs plain blue. Nest in holes.

"The species of this genus are all well marked, and adult males are easily distinguishable. In all, blue forms a prominent feature. Three well-marked species are known, with a fourth less distinct. The females are duller in color than the males. The young are spotted and streaked with white." (*Hist. N. Am. B.*)

Common Characters. *Adult male* bright blue above, beneath cinnamon and white (*S. sialis*), blue and chestnut (*S. mexicana*), or blue and white (*S. arctica*); *adult female* with the blue above confined to the wings, rump, and tail, the upper parts being grayish, the lower parts paler and duller than in the male (in *S. arctica*, breast, etc., grayish drab). *Young*, with the grayish or dusky upper parts spotted or streaked with whitish, and the whitish lower parts squamately spotted with dusky.

a^1. Breast and sides chestnut or cinnamon.

1. **S. sialis.** Throat cinnamon, like the breast; belly white; upper parts cobalt-blue. *Hab.* Eastern North America.
2. **S. mexicana.** Throat deep blue; belly grayish blue; upper parts rich smalt-blue, the back usually with a chestnut patch. *Hab.* Western U. S., chiefly in the valleys.

b^2. Breast and sides turquoise-blue.

3. **S. arctica.** Upper parts rich azure-blue; belly white. *Hab.* Western U. S., chiefly on the higher mountains, and northward to the interior of British America.

The three known species of this genus are included in the above synopsis for the reason that two of them have already been recorded as occurring in the State, while the third (*S. mexicana*) is said to have been taken in Iowa, and may therefore possibly, like other western species, occasionally straggle to Illinois.

The females of the three species differ from one another in much the same characters as those which distinguish the males, though the colors being much duller the differences are far less striking.

Sialia sialis (Linn.)

BLUEBIRD.

Popular synonym.—Eastern Bluebird.

Motacilla sialis Linn. S. N. ed. 10, i. 1758, 187; ed. 12, i. 1766, 336.
Sylvia sialis Lath. Ind. Orn. ii. 1790, 522.—Wils. Am. Orn. i. 1808, 56, pl. 3, fig. 3.
Ampelis sialis Nutt. Man. i. 1832, 444.
Sialia sialis Haldem. Trego's Geog. Penn. 1843. 77.—Baird, B. N. Am. 1858, 222; Cat. N. Am. B. 1859, No. 158; Review, 1864, 62.—Coues, Key, 1872, 76; Check List, 1873, No. 16; 2d ed. 1882, No. 27; B. N. W. 1874, 13; B. Col. Val. 1878, 77.—B. B. & R. Hist. N. Am. B. i. 1874, 62, pl. 5, fig. 3.—Ridgw. Nom. N. Am. B. 1881, No. 22.
Sialia wilsonii Swains. Zoöl. Jour. iii. 1827, 173.—Sw. & Rich. F. B. A. ii. 1831, 210.

Hab. Eastern North America, west to the eastern base of the Rocky Mountains, north to British Provinces. Breeds throughout its normal range, and winters in most portions of the eastern U. S. Resident in Bermuda.

"Sp. Char. Entire upper parts, including wings and tail, continuous and uniform azure-blue; the cheeks of a duller tint of the same. Beneath reddish brown; the abdomen, anal region, and under tail-coverts white. Bill and feet black. Shafts of the quills and tail feathers black. Length, 6.75; wing, 4.00; tail, 2.90.

"*Young.* Males of the year dull brown on head, back, and lesser coverts; streaked, except on head, with white. Throat and fore part of breast streaked with white. Tertials edged with brown. Rest of coloration somewhat like adult."

So well known are the habits of the common, familiar Bluebird, that little need be said here on the subject. Partially migratory almost everywhere, it may be occasionally seen in winter even in the most northern States, but probably nowhere north of the parallel of 40° can it be looked for with any certainty at this season of the year. Few birds in the whole world possess as many attractive features as the Bluebird. With the confiding familiarity of the European Robin Redbreast (*Erithacus rubecula*), it is adorned with a plumage of tropical beauty and is endowed with a voice of peculiar tenderness. By an English writer residing in Bermuda, he is styled "the loveliest of birds . . . . . with the blue of a Bermuda sky upon his back, and on his breast the tint of its rosy dawn."

"Common summer resident, nesting in boxes put up for their accommodation. The English sparrows attack and chase away the Bluebirds, and many that nested in the city have gone into the suburbs and now nest in hollow trees or holes in fence posts. In August they frequent stump fields and cleared woods, in flocks and families. The males sing at this time, but in a weird, far-away tone. Once found a nest built between the stalks of a geranium plant in a large flower urn. Arrived March 6, 1879, but in warm seasons are as early as February 20." (H. K. Coale, MS.)

Sialia arctica (Swains.)

MOUNTAIN BLUEBIRD.

Popular synonyms.—Arctic Bluebird; Rocky Mountain Bluebird.

Erythaca (Sialia) arctica SW. & RICH. F. B. A. ii, 1831, 339, pl. 39.

Sialia arctica Baird, Rep. U. S. and Mex. Bound. Surv. 1859, 39; B. Am. ii, 1860, 271, pl. xcii.—Baird, B. N. Am. 1858, 221, Ind. B. Am. ii, 1860, 39.—Cooper & Suck. N. H. Wash. Terr. 1860, 194, no. 20; B. N. W. R. 20, B. Cal. Nev. 1870, 20.—B. & R. Hist. N. A. B. i, 1874, 47, pl. 5, fig. 4—Brewer, Nom. N. Am. B. 1883, No. 24.

Sylvia arctica AUD. Orn. Biog. v, 1839, 38, pl. 393.

Male. Western mountain districts of North America north to lat. 64°, south nearly or quite to the Mexican boundary at least in winter.

Male. Uniform sky-blue above and below, brightest about the belly and under tail-coverts; quills and tail-feathers dusky with blue on the edges. Female: covering of back as in the male; wings and tail, a white ring round the eye, the crest and cheeks a dusky brown variegated, elsewhere replaced by brown. Length 7 in.; wing 4.30; tail, 3.00. (Ridgw.)

Young. Have their backs streaked with white, as in *S. sialis*, on the characteristic ground of the adult.

"As already stated, the blue of this species is greener than in adults. The females are distinguished from those of the other species by the greener blue, entire absence of rufous, and longer wings.

"In autumn and winter the blue of the male is much soiled by umber-brown edges to the feathers, this most conspicuous on the breast, where the blue is sometimes almost concealed; the plumage of the female, too, at this season is different from that of spring, the anterior lower parts being soft isabella-color, much less grayish than in spring." *(Hist. N. Am. B.)*

The only claim of this species to a place in the Illinois fauna rests on the single record, by Mr. Nelson (*Pr. Essex Inst.* viii. 1876, p. 95) of the capture of a specimen opposite Dubuque, Iowa.

The home of the Arctic or Rocky Mountain Bluebird is the mountainous region of western North America, especially the ranges of the interior, and thence northward through the more elevated portions of British America to a high latitude. As the Californian Bluebird (*S. mexicana*) is essentially a bird of the lower valleys, so is the present species emphatically a bird of the mountains, its visits to the lower portions of the country being mainly during winter.

SUBFAMILY MYADESTINÆ.—THE SOLITAIRES.

The birds of this subfamily have usually been placed with the Ampelidæ, in a group including also the genera *Phainopepla* and

Ptilogonys. Its true relationship, however, is decidedly with the Turdidæ, to which its booted tarsi, its habits, the spotted plumage of its young, and many other characters ally it closely.

The only North American genus is the following:

Genus **MYADESTES** Swainson.

Myadestes Swainson, Jard. Nat. Library, xiii., Flycatchers, "1838," 132. Type, *M. genibarbis* Sw.

"Gen. Char. Occipital feathers full and soft. Plumage rather loose. Bill weak, much depressed. Commissure nearly straight. Hind toe longer than inner lateral. Toes deeply cleft. Closed wing externally with an exposed light band across the base of the quills, and another nearer the end, separated by a darker one. Tail somewhat graduated on the sides.

"Of the ten or more described species of the genus, only one belongs to the limits of the United States, although several others occupy adjacent territory in Mexico. Several are peculiar to islands of the West Indies." (*Hist. N. Am. B.*)

Myadestes townsendii (Aud.)

TOWNSEND'S SOLITAIRE.

Popular synonyms.—Townsend's Flycatcher, or Flycatching Thrush; Townsend's Ptilogonys.

Ptiliogonys townsendii Aud. Orn. Biog. v, 1839, 206, pl. 419, fig. 2; Synop. 1839, 46; B. Am. 1, 1840, 243, pl. 69.—Nutt. Man. 2d ed. I, 1840, 361.

Myadestes townsendi Caban, Wiegm. Archiv. 1847, i., 208.—Baird, B. N. Am. 1858, 321; Cat. N. Am. B. 1859, No. 235; Review, 1866, 429.—Coues, Key, 1872, 117; Check List, 1873, No. 121; 2d ed. 1882, No. 169; B. N. W. 1874, 93; B. Col. Val. 1878, 44.—B. B. & R. Hist. N. Am. B. I, 1874, 406, pl. 18, figs. 3, 4.—Ridgw. Nom. N. Am. B. 1881, No. 25.

Hab. Western Mountain districts of the United States, from the Mexican boundary to British Columbia. (Accidental straggler to northern Illinois.)

"Sp. Char. Tail rather deeply forked. Exposed portion of spurious quill less than one third that of the second; fourth quill longest; second a little longer than the sixth. Head not crested. General color brownish ash, paler beneath; under wing-coverts white. Quills with a brownish yellow bar at the base of both webs, mostly concealed, but showing a little below the greater coverts and alulæ; this succeeded by a bar of dusky, and next to it another of brownish yellow across the outer webs of the central quills only. Tertials tipped with white. Tail feathers dark brown; the middle ones more like the back; the lateral with the outer web and tip, the second with the tip only, white. A white ring round the eye. Length, 8 inches; wing, 4.50; tail, 3.85. (8,234.)

"Young birds have a large triangular pale-ochraceous light spot on the end of each feather (rather paler below), bounded externally by a narrow border of blackish; the quill and tail feathers as in adult." (*Hist. N. Am. B.*)

Illinois is far from the normal habitat of this interesting bird, whose true home is the mountainous regions of the Far West. A single specimen, however, was shot at Waukegan, by Mr. Charles Douglas, on the 16th of December, 1875. Mr. Nelson informs us that it was "found in a sheltered ravine, extending a short distance into the bluff, bordering the lake shore near the above-named place, and showed no alarm when approached. Nothing peculiar was observed concerning its habits except that its movements were very sprightly." Mr. Douglas has recently written me that it was eating the seeds of the common black thorn-apple (*Cratægus tomentosa*), and that it was quite silent.

Townsend's Solitaire is, from all accounts, a charming songster—the finest, perhaps, among North American birds. Dr. Newberry describes its song as clear, full and melodious, and, although not greatly varied, the notes are all particularly clear and sweet, with strains of pure gushing melody that were both spontaneous and inspiring. Dr. Cooper says that its song can be compared with nothing uttered by any other bird he has ever heard in the United States; and that it excels that of the Mockingbird in sweetness, while it is entirely original. Mr. J. K. Lord, who heard them singing in November, at Fort Colville, Washington Terr., describes their song, as heard on that occasion, as resembling that of the Song Thrush (*Turdus musicus*) of Europe.

Family SYLVIIDÆ.—The Warblers.

Characters. There is very little by which to distinguish the birds of this Family from the Turdidæ, beyond the very much smaller size and the unspotted plumage of the young. Of the so-called subfamilies here recognized, the *Polioptilinæ* are without much question out of place, though it is very uncertain where they do belong. For the convenience of the student, however, we place them here in accordance with the arrangement adopted by the American Ornithologists' Union.

American Ornithologists' Union.

The so-called subfamilies may be distinguished as follows:

a.[1] Wings longer than the nearly even or emarginate tail. Anterior tarsal envelope continuous for the greater part of its extent. No white on tail.
  b.[1] Nostrils exposed. Scutellæ distinct on inner side of tarsus.....Sylviinæ
  b.[2] Nostrils concealed by feathers. Tarsal envelope without appreciable scutellæ.....Regulinæ
a.[2] Wings not longer than the graduated tail. Anterior tarsal envelope distinctly scutellate. Tail with white terminal spots and edgings.....Polioptilinæ

Subfamily POLIOPTILINÆ.—The Gnatcatchers.

Genus POLIOPTILA Sclater.

Polioptila Sclater Pr. Zoöl. Soc. 1855, 11. Type, *Motacilla cærulea* Linn.

Char. Bill slender, attenuated, but depressed at the base; nearly as long as the head, distinctly notched at the tip, and provided with moderate rictal bristles. Nostrils rather elongated, not concealed, but anterior to the frontal feathers. Tarsi longer than the middle toe, distinctly scutellate; the toes small, the hinder one scarcely longer than the lateral; its claw scarcely longer than the middle. Outer lateral toe longer than the inner. First primary about one-third the longest; second equal to the seventh. Tail a little longer than the wings, moderately graduated; the feathers rounded. Nest felted and covered with moss or lichens. Eggs greenish white, spotted with purplish brown.

"The species all lead-color above; white beneath, and to a greater or less extent on the exterior of the tail, the rest of which is black. Very diminutive in size (but little over four inches long)." (*Hist. N. Am. B.*)

Polioptila cærulea (Linn.)

BLUE-GRAY GNATCATCHER.

Popular synonyms.—Blue Wren; Long-tailed Blue Wren; Eastern Gnatcatcher.

Motacilla cærulea LINN. S. N. ed. 12, i, 1766, 337.
Sylvania cærulea NUTT. Man. 2d ed. i, 1840, 337.
Culicivora cærulea AUD. B. Am, i, 1840, 244, pl. 70.
Polioptila cærulea SCL. P. Z. S. 1855, 11.—BAIRD, B. N. Am. 1858, 380; Cat. N. Am. B. 1859, No. 282; Review, 1864, 74.—COUES, Key, 1872; Check List, 1873, No. 23; 2d ed. 1882, No. 36; B. N. W. 1874, 17; B. Col. Val. 1878, 101.—B. B. & R. Hist. N. A. B. i, 1874, 78, pl. 6, fig. 5.—RIDGW. Nom. N. Am. B., 1881, No. 27.

HAB. United States, chiefly south of 40°; wintering in extreme southern States, Cuba, Mexico, and Guatemala.

"SP. CHAR. Above grayish blue, gradually becoming bright blue on the crown. A narrow frontal band of black extending backwards over the eye. Under parts and lores bluish white tinged with lead-color on the sides. First and second tail feathers white except at the extreme base, which is black, the color extending obliquely forward on the inner web; third and fourth black, with white tip, very slight on the latter; fifth and sixth entirely black. Upper tail-coverts blackish plumbeous. Quills edged externally with pale bluish gray, which is much broader and nearly white on the tertials. Female without any black on the head. Length, 4.30; wing, 2.15; tail, 2.25. (Skin.)" (*Hist. N. Am. B.*)

This active little bird inhabits chiefly open high woods, often along streams, where he may be seen skipping and darting about among the topmost branches, his long tail elevated and jerking in wren-like fashion,—always moving about and ever uttering his wheezy, squeaky notes. During the breeding season the male has a very varied song of considerable power but lacking in sweetness, and uttered in an erratic manner, portions of it suggesting a weak imitation of the Catbird's medley.

The nest of this species is one of the gems of bird architecture. It is a very compact mass of soft felted materials, elaborately and artistically ornamented on the outside with gray and glaucous lichens, the deep interior cavity cosily lined with softest down and feathers. The shape varies from that of a deep cup to that of an inverted cone, the opening being always at the top. This elegant structure is securely fastened—either saddled to or woven about—a horizontal limb, usually near the top of a tree, but, especially if the tree be a very tall one, sometimes on one of the lower branches. Often it is attached to a limb of nearly the same diameter as itself, thus appearing as a knot or other excrescence.

This species is one of the earliest to arrive in spring, making its appearance at Mt. Carmel early in April, the 2nd and 10th of that month being the earliest and latest dates recorded by the writer. In Cook county, Mr. Coale says that it is a "rather common migrant," but that it was really common only in the spring of 1875, when several were shot in Hyde Park. He had not found it breeding, however, though it was found doing so by Mr. G. F. Clingman at Whiting Station, Indiana, near the Illinois line. At St. Louis, Mr. Coale found it very common and nesting on May 22, 1883.

Subfamily REGULINÆ.—The Kinglets.

Genus REGULUS Cuvier.

Regulus Cuv. Leçons d'Anat. Comp. 1799–1800, tabl. ii. Type, *Motacilla regulus* Linn.

Corthylio Cab. Jour. Orn. i, 1853, 83. Type, *Motacilla calendula* Linn.

"Gen. Char. Bill slender, much shorter than the head, depressed at base, but becoming rapidly compressed; moderately notched at tip. Culmen straight to near the tip, then gently curved. Commissure straight; gonys convex. Rictus well provided with bristles; nostrils covered by a single bristly feather directed forwards (not distinct in *calendula*). Tarsi elongated, exceeding considerably the middle toe, and without scutellæ. Lateral toes about equal; hind toe with the claw, longer than the middle one by about half the claw. Claws all much curved. First primary about one third as long as the longest; second equal to fifth or sixth. Tail shorter than the wings, moderately forked, the feathers acuminate. Colors olive-green above, whitish beneath. Size very small." (*Hist. N. Am. B.*)

Common Characters. Above olive-greenish, brighter on rump and edges of secondaries and rectrices; secondaries with a broad black basal bar. Beneath dull whitish. *Male* with a brightly colored crown-patch of red, orange, or yellow, with black stripes in some species, in which the female has a yellow crown-patch. *Young* (and adult female of *R. calendula*) without any markings or bright colors on head.

a^1 Crown with a broad black stripe on each side.

1. **R. satrapa.** Forehead smoky whitish; crown-patch bicolored in the male—intense orange centrally, with a yellow border—uniform yellow in the female.

2. **R. cuvieri.** Forehead and a stripe across lores and behind the eye, black; crown-patch uniform red in the male.

a^2 Crown without black stripes.

3. **R. calendula.** Crown with a central patch of vermilion-red in the aldult male, this usually absent, or when present much reduced in size, in the female.

The first and third species whose characters are given above are very abundant birds in all parts of the State—the first throughout the winter, the other chiefly during the spring and fall migrations, but wintering to some extent in the southern portions. The second species (*R. cuvieri*) was discovered many years ago, on the banks of

the Schuylkill River, in Pennsylvania, by Audubon, and is at present known only by the description and illustration given in the works of its discoverer. It is one of several species belonging to the same category, among which may be mentioned the Carbonated Warbler (*Perissoglossa carbonata*), Small-headed Flycatcher (*Sylvania microcephala*), Blue Mountain Warbler (*Dendroica montana*), etc. But since two other species (*Centronyx bairdii* and *Coturniculus lecontei*) until within a few years past included in the same list are now well-known birds, it is quite possible that a few years hence, when the number of intelligent observers has increased, we may know more of Cuvier's Kinglet.

Regulus satrapa Licht.

GOLDEN-CROWNED KINGLET.

Popular synonyms. — Golden-crested Kinglet; Golden-crowned Wren; American Golden-crowned Wren, or Kinglet; American Golden-crest.

Sylvia regulus Wils. Am. Orn. i. 1808, 126, pl. 8, fig. 2 (not of Linn.)

Regulus cristatus Nutt. Man. i. 1832, 420.—Aud. Orn. Biog. ii. 1834, 476, pl. 185 (not of Koch).

Regulus satrapa Licht. Verz. Doubl. 1823, No. 410.—Aud. Synop. 1839, 82; B. Am. ii. 1841, 165, pl. 132.—Baird, B. N. Am. 1858, 227; Cat. N. Am. B. 1859. No. 162; Review, 1864, 65. —Coues, Key, 1872, 78; Check List, 1873, No. 22; 2d ed. 1882, No. 34; B. N. W. 1874, 16; B. Col. Val. 1878, 96.—B. B. & R. Hist. N. A. B. i. 1874, 73, pl. 5, fig. 8.—Ridgw. Nom. N. Am. B. 1881, No. 33.

Hab. Whole of North America, breeding mostly northward of and wintering chiefly within the United States; in winter extending also far into Mexico, on the elevated table-lands.

"Sp. Char. Above olive-green, brightest on the outer edges of the wing and tail feathers, and tinged with brownish gray towards the head. Forehead, a line over the eye and a space beneath it, white. Exterior of the crown before and laterally black, embracing a central patch of orange-red, encircled by gamboge yellow. A dusky space around the eye. Wing-coverts with two yellowish-white bands, the posterior covering a similar band on the quills, succeeded by a broad dusky one. Under parts dull whitish. Length under four inches; wing, 2.25; tail, 1.80. *Female* without the orange-red central patch. Young birds without the colored crown." (*Hist. N. Am, B.*)

"*First plumage: female.* Pileum (including forehead) dark smoky-brown; line over the eye entirely cut off at its anterior corner by the junction of the dusky lores with the brown of the forehead; tertiaries broadly tipped with white; breast strongly washed with pale fawn-color; otherwise like adult. From a specimen in my collection taken at Upton, Me., August 25, 1874. A young male taken August 25, 1873, is in every way similar. A good series of specimens of various ages shot during August and the early part of September illustrate well the transitional stages. First the brown of the pileum darkens into two black stripes, while the line over the eye broadens to meet its external margin. Next, two lines of yellow feathers appear inside and parallel with the black ones, while the orange of the central space (of the male) is produced last." (Brewster, Bull. Nutt. Orn. Club, June, 1878, 19.)

The delicate little Golden-crowned Kinglet—smaller even than the Ruby-crown—is known in Illinois, and indeed in all portions of the United States, except the northern coniferous woods and similar forests of the higher mountains, only as a winter visitant or resident. He is most often seen during clear frosty mornings in midwinter, and seems particularly in his element when the trees are decked with an icy covering of sleet—when the woods appear like fairy land, and the pure crisp air instills fresh vigor to those who sally forth to enjoy its exhiliarating influence. Then the little Gold-crests may be seen in woods or parks in scattered troops, nimbly hunting among the crystal branches, now hanging in Titmouse fashion, then dropping to another limb, and carelessly hopping about, apparently not feeling the contact of the ice with their tiny feet. At such times none of our birds are tamer than these dainty little creatures and none certainly more lovely. They come about the intruder as if utterly unmindful of his presence, often so near that the sparkle of the little black eye, the flash of the glowing orange crown, and every detail of his pretty plumage can be plainly seen.

In its northern summer home, the Gold-crest is said to have an agreeable though delicate song, far inferior, however, to that of the Ruby-crown. In winter, its usual note is a delicate wiry chirp, impossible to express in writing, but nearly if not quite undistinguishable from the ordinary note of the Brown Creeper.

According to Mr. Coale, it is a "very common migrant" in Cook county. "Ever active and uttering a *te-tze, tze-tze* as they fly into every nook and corner of the foliage of trees."

Regulus calendula (Linn.)

RUBY-CROWNED KINGLET.

Popular synonym. —Ruby-crowned Wren.

Motacilla calendula Linn. N. N. ed. 12, i. 1766, 337.

Sylvia calendula Lath. Ind. Orn. ii. 1780, 549.—Wils. Am. Orn. i. 1808, 83, pl. 5, fig. 3.

Regulus calendula Licht. Verz. Doubl. 1823.—Nutt. Man. i. 1832, 415.—Aud. Orn. Biog. ii. 1834, 546, pl. 195; Synop. 1839, 83; B. Am. ii. 1841, 168, pl. 133.—Baird, B. N. Am. 1858, 226; Cat. N. Am. B. 1859, No. 161; Review, 1864, 66.—Coues, Key, 1872, 78; Check List, 1873, No. 21; 2d ed. 1882, No. 34; B. N. W. 1874, 15; B. Col. Val. 1878, 93.—B. B. & R. Hist. N. Am. B. i, 1874, 75, pl. 5, fig. 9.—Ridgw. Nom. N. Am. B. 1881, No. 30.

Hab. The whole of North America, breeding chiefly north of the United States, but south to Colorado, at least, in the Rocky Mountains; wintering in the more southern United States, and thence to Mexico and Gautemala. (Accidental in Europe and Greenland.)

"SP. CHAR. Above dark greenish-olive, passing into bright olive green on the rump and outer edges of the wings and tail. The under parts are grayish white tinged with pale olive yellow, especially behind. A ring round the eye, two bands on the wing-coverts, and the exterior of the inner tertials white. *Male.* Crown with a large concealed patch of scarlet feathers, which are white at the base. *Female* and *young* without the red on the crown. Length, 4.50, wing, 2.33; tail, 1.85.

"This species of *Regulus* appears to lack the small feather which in *satrapa* overlies and conceals the nostrils, which was probably the reason with Cabanis and Blyth for placing it in a different genus. There is no other very apparent difference of form, however, although this furnishes a good character for distinguishing between young specimens of the two species." (*Hist. N. Am. B.*)

The diminutive Ruby-crowned Kinglet is scarcely known in the United States except as a transient visitor in spring and fall, making himself more conspicuous in the former season, when the fruit-trees are decked with blossoms, among which he may be seen engaged in the occupation of snatching from the half opened buds and the unfolding leaves the minute insects which constitute his food. His summer home is among the northern coniferous forests, and he winters in the milder regions of the more southern States.

The song of this bird is comparatively powerful for so small a creature, and is remarkable for its softness and sweet expression. It consists of an inexpressibly delicate and musical warble, astonishingly protracted at times, and most beautifully varied by softly rising and falling cadences, and the most tender whistlings imaginable. Dr. Brewer says that its notes are "clear, resonant, and high, and constitute a prolonged series, varying from the lowest tones to the highest, and terminating with the latter. It may be heard at quite a distance, and in some respects bears more resemblance to the song of the English Sky-lark than to that of the Canary, to which Mr. Audubon compares it." We have never heard the Sky-lark sing; but there is certainly no resemblance between the notes of the Ruby-crowned Wren and those of the Canary, the latter being as much inferior in tenderness and softness as they are superior in volume.

Family **PARIDÆ**.—The Titmice and Nuthatches.

Characters. Bill more or less conical, without notch, the nasal feathers directed forward and usually concealing the nostrils. Size small (wing less than four inches long.) Tarsi distinctly scutellate.

The above characters are drawn up to include *Chamæa*, whose claim to a place in the Family Paridæ is a matter of serious doubt. *Sitta*, although appearing so very distinct from the typical *Paridæ* is yet so closely connected through Palæarctic forms of the latter (as *Parus varius* of Japan) that there can be no doubt of its belonging to the same family.

The North American subfamilies, including *Chamæa*, may be defined as follows:—

a.[1] Bill stout, much shorter than head. Tail about as long as the wing, or longer. Hallux shorter than middle toe.
  b.[1] Nostrils concealed by feathers. Tarsus with anterior covering scutellate on outer side ..... **Parinæ**.
  b.[2] Nostrils exposed. Tarsus with anterior covering fused on outer side.. **Chamæinæ**.
a.[2] Bill slender, as long as the head. Tail much shorter than the wing. Hallux longer than middle toe ..... **Sittinæ**.

Subfamily **PARINÆ**.—The Titmice.

This subfamily, as above characterized, includes three North American Genera, which may be defined as follows:—

a[1]. Bill with either the culmen or gonys decidedly convex. Nostrils wholly concealed. Plumage very lax.
  b[1]. Tail about equal to or not much longer than wing, rounded ..... **Parus**.
    c[1]. Head not crested.....(Subgenus *Parus*.)
    c[2]. Head crested .....(Subgenus *Lophophanes*.)
  b[2]. Tail much longer than wing, graduated.....**Psaltriparus**.
a[2]. Bill with both culmen and gonys nearly straight, the tip acute. Nostrils partly exposed. Plumage rather compact.....**Auriparus**.

The genera *Psaltriparus* and *Auriparus*, as well as the subfamily *Chamæinæ* (the latter including the single genus *Chamæa*), are extralimital, belonging to the southwestern portions of the United States.

Genus **PARUS** Linnæus.

Subgenus **Lophophanes** Kaup.

Lophophanes Kaup, Entw. Gesch. Europ. Thier. 1829. Type, *Parus cristatus* Linn.
Bœolophus Cabanis, Mus. Hein. 1850, 1851, 91. Type, *Parus bicolor* Linn.

"Gen. Char. Crown with a conspicuous crest. Bill conical; both upper and lower outlines convex. Wings graduated; first quill very short. Tail moderately long and rounded. Nests in hollow trees; eggs white with fine red dottings." (*Hist. N. Am. B.*)

This subgenus scarcely differs from *Parus* except in the possession of a well developed pointed crest. But one species occurs east of the Rocky Mountains, except in Texas, where a Mexican species, *P. atricristatus* is found. In Western Texas to Arizona occurs another Mexican species, *P. wollweberi*, while in California and other parts of the Western Province *P. inornatus* is found.

Parus bicolor Linn.

TUFTED TITMOUSE.

Popular synonym. —Black-fronted Titmouse.

Parus bicolor Linn. S. N. ed. 12, i, 1766, 340.—Wils. Am. Orn. i. 1808, 137, pl. 8, fig. 5.—Aud. Orn. Biog. i, 1831, 199, pl. 39; Synop. 1839, 78; B. Am. ii. 1841, 143, pl. 125.—Nutt. Man. i, 1832, 236.

Lophophanes bicolor Bonap. Consp. i, 1850, 228.—Baird, B. N. Am. 1858, 384; Cat. N. Am. B. 1859, No. 285; Review, 1864, 78.—Coues, Key, 1872, 80; Check List, 1873, No. 27; 2d ed. 1882, No. 40; B. N. W. 1874, 19; B. Col. Val. 1878, 113.—B. B. & R., Hist. N. Am. B. i, 1874, 87, pl. 6, fig. 1.—Ridgw, Nom. N. Am. B. 1881, No. 36.

Hab. Eastern United States, west to Nebraska and eastern Texas, north to the Connecticut Valley; resident and breeding throughout.

"Sp. Char. Above ashy; a black frontal band. Beneath dull whitish; sides brownish chestnut, of more or less intensity. Feathers of the crown elongated into a flattened crest, which extends back as far as the occiput. Bill conical; lower edge of upper mandible nearly straight at the base. Fourth and fifth quills equal; third a little shorter than seventh; second rather shorter than the secondaries. Tail nearly even, the outer feather about .20 of an inch shorter than the longest. Upper parts ash-color, with a tinge of olivaceous. Forehead dark sooty-brown. The feathers of the upper part of the head and crest obscurely streaked with lighter brown. Under parts of head and body, sides of head, including auriculars, and a narrow space above the eye, dirty yellowish white, tinged with brown; purest on the side of head, the white very distinct in the loral region, and including the tuft of bristly feathers over the nostrils, excepting the tips of those in contact with the bill, which are blackish. The sides of the body and the under tail-coverts are tinged with yellowish brown. The quills and tail feathers are edged with the color of the back, without any whitish. Bill black. Feet lead-color." (*Hist. N. Am. B.*)

Length, about 6.25 inches; extent, 9.25; wing, 3.05–3.45.

Perhaps no bird is more abundant in wooded districts of the southern half of the State, than this species; and this applies equally to all parts of the year. Roving in restless noisy troops through the woods, scolding at every intruder and calling to one another in harsh tones, they are often, on this account, very annoying to the collector or the hunter. During winter they become very familiar, approaching with confidence the immediate vicinity of dwellings (which, indeed, they seem inclined to shun only during the breeding season), and, in company with Snowbirds (*Junco hyemalis*), Carolina Chickadees, Nuthatches (*Sitta carolinensis*), Blue-jays, and other familiar species, glean their portion from the refuse

of the table—bread-crumbs, bits of meat, or indeed anything eatable. The notes of this species in their general character resemble those of the Chickadees, but are much louder and more vehement. In spring the male has a very pleasant call, consisting of a repetition of the syllables *pēto, pēto, pēto* in a very clear and rather sweet whistling tone. The nest is built in cavities of trees, like that of other species of the family.

Subgenus **Parus** Linnæus.

Parus Linn. S. N. ed. 10, i. 1758, 189; ed 12, i. 1766, 340. Type, by elimination, *P. major* Linn.

"Gen. Char. Head not crested. Body and head full. Tail moderately long, and slightly rounded. Bill conical, not very stout; the upper and under outlines very gently and slightly convex. Tarsus but little longer than middle toe. Head and neck generally black or brown, with sides white. Nest in holes. Eggs white, sprinkled with red." (*Hist. N. Am. B.*)

The species of this subgenus which occur in Illinois, may be distinguished as follows:

Common Characters. Above plain grayish, with or without distinct whitish edgings on larger wing feathers; beneath whitish, the sides tinged with ochreous, fulvous, or rufous; entire pileum, chin, and throat, black, or brownish, the sides of the head whitish. Sexes alike, and young similar in plumage to the adult.

a^1. Crown and throat deep black.

1. **P. atricapillus.** Tail about equal to the wing (rarely a very little shorter, usually longer); greater wing-coverts and tertials very conspicuously edged with whitish; black of the throat much broken posteriorly by white tips to the feathers. Wing 2.50–2.75 (2.63), tail 2.50–2.75 (2.63), tarsus, .65–.70 (.69). *Hab.* Northern portion of the State; very rare winter visitant to southern half.
2. **P. carolinensis.** Tail decidedly shorter than wing; wing-coverts and tertials without distinct whitish edges; black of throat with abruptly defined posterior border. Wing 2.40–2.60 (2.44), tail 2.10–2.50 (2.19), tarsus .55–.65 (.61). *Hab.* Southern half or more of the State, resident wherever found.

a^2. Crown and throat brownish, the latter darkest.

3. **P. hudsonicus.** Crown hair-brown, back slightly more olivaceous; sides of neck ash-gray, the cheeks paler, inclining to white anteriorly; throat sooty blackish; sides dull rusty. *Hab.* Rare winter visitant to extreme northern part of State.

Parus atricapillus Linn.

CHICKADEE.

Popular synonyms. Black-capped Titmouse or Chicadee; Eastern Chickadee; Northern Chickadee.

Parus atricapillus Linn. S. N. ed. 12, i, 1766, 341.—Wils. Am. Orn. i, 1808, 134, pl. 8, fig. 4.—Sw. & Rich. F. B. A. ii, 1831, 226.—Aud. Orn. Biog. iv. 1838, pl. 353, fig. 3; Synop. 1839, 79; B. Am. ii. 1841, 146, pl. 126.—Baird, B. N. Am. 1858, 390; Cat. N. Am. B. 1859, No. 290; Review, 1864, 80.—Coues, Key, 1872, 81; Check List, 1873, No. 31; 2d ed. 1882, No. 44; B. N. W. 1874, 20.—B. B. & R. Hist. N. Am. B. i, 1874, 96, pl. vii, fig. 1.—Ridgw. Nom. N. Am. B. 1881, No. 41.

HAB. Northeastern North America, or from northern United States east of the Great Plains and northward; winter visitant south to about 40° or a little further. (Replaced in the Rocky Mountain district and Great Plains and thence northward to Alaska by the more slender, lighter colored race, *septentrionalis* Harris.)

SP. CHAR. *Adult:* Entire pileum and cervix glossy black; chin, throat, and malar region black, this broken posteriorly by whitish tips to the feathers; sides of head and neck white. Upper parts ash gray, more or less tinged with yellowish; wings blackish, the feathers edged with light ashy, the greater coverts and tertials broadly edged with white. Tail dusky, the feathers edged with ashy, inclining to white on lateral rectrices. Median lower parts (from jugulum back) white, lateral portions buff. Bill black; feet bluish plumbeous, iris dark brown. *Young:* Very similar to the adult, but black of pileum and cervix without gloss, that of the throat more sooty, buff of sides less distinct, and plumage of looser texture.

Male (7 specimens): Wing, 2.60-2.75 (average, 2.66); tail, 2.60-2.75 (2.63); tarsus, .65-.70 (.69(.

Female (3 specimens:) Wing, 2.55-2.60 (2.58); tail, 2.50-2.60 (2.57), tarsus, .68-.70 (69).

This familiar and active little bird is almost confined to the northern half of the State, making its appearance south of the 39th parallel, so far as the writer's knowledge and observation are concerned, only at rare or at least very irregular intervals during the coldest weather. Its habits are too well known to require description here.

Parus carolinensis Aud.

CAROLINA CHICKADEE.

Popular synonyms.—Carolina Titmouse; Southern Chickadee.

Parus carolinensis AUD. Orn. Biog. ii, 1834, 474, pl. 160; B. Am. ii, 1841, 152, pl. 127.—BAIRD, B. N. Am. 1858, 392; Cat. N. Am. B. 1859. No. 293; Review, 1864, 81.—COUES, 2d Check List, 1882, No. 47; 2d Key, 1884, 266.—B. B. & R. Hist. N. Am. B. i, 1874, 102, pl. 7, fig. 3.—RIDGW. Nom. N. Am. B. 1881, No. 42.

Parus atricapillus var. *carolinensis* Coues, Key, 1872, 81; Check List, 1873, No. 315.

HAB. Southern half of Eastern United States, north to or beyond 40°, west to eastern Texas and Indian Territory. (Resident throughout its range.)

"SP. CHAR. Second quill appreciably longer than secondaries. Tail very little rounded Length about 4.50 inches; wing less than 2 50; tail, 2.40.* Back brownish ash. Head above, and throat, black, separated on sides of head by white. Beneath white; brownish white on sides. Outer tail feathers, primaries, and secondaries, not edged with white."

This species, which is the more common one in Illinois (except the extreme northern counties) may readily be distinguished from *P. atricapillus* by the more extensive and more "solid" black on the throat; by the absence of distinct white edgings to the wing and tail feathers, and by the different proportionate length of the wing and tail. (See synoptical table.)

This pretty, active and familiar little bird occurs throughout the State, but is most common in the southern half, where it is the representative of the northern Black-cap (*P. atricapillus*). The

*In fourteen adults, the wing measures 2.40-2.60, the average being 2.46; tail 2.10-2.50 (average, 2.15); tarsus, .55-.65 (average, .60).

relative areas occupied by these two species are, however, by no means well made out, but it is probable that the larger portion of the State is occupied by the present species, to the exclusion of the other.

Woods, especially those of bottom-lands, are the favorite resort of this species; and in summer it may always be found wherever there are plum thickets or many red-bud trees, since in the soft wood of dead trees of these kinds it is able to excavate with ease a hole for its nest. As a rule, however, it selects a cavity already made, as the deserted hole of the Downy Woodpecker, a knot-hole, or a hollow fence rail. In winter it is very familiar, keeping much about door-yards and orchards, even in towns, and gleaning its daily food from the "back steps," where the table cloth is shaken, and where it may often be seen perched on the edge of the garbage pail, pecking bits of meat, etc., from the contents.

The notes of this species are decidedly louder than those of the Black-cap, and his spring song of *chick'-a-dee, chick'-a-dee, chick'-a-dee*, uttered in a very clear and sweet whistling tone, is very pleasing.

Parus hudsonicus Forst.

HUDSONIAN CHICKADEE.

Popular synonyms. Hudsonian Titmouse; Hudson's Bay Titmouse, or Chickadee.

Parus hudsonicus Forst. Philos. Trans. lxiii, 1772, 383, 430.—Aud. Orn. Biog. ii, 1834, 543, pl. 194; B. Am. ii, 1841, 155, pl. 128.—Baird, B. N. Am. 1858, 395; Cat. N. Am. B. 1859, No. 296; Review, 1864, 82.—Coues, Key, 1872, 81; Check List, 1873, No. 33; 2d ed. 1882, No. 49.—B. B. & R. Hist. N. Am. B. i. 1874, 105, pl. 7, fig. 7.—Ridgw. Nom. N. Am. B, 1881, No. 45.

Hab. Northern North America, south to extreme northern border of the United States, except on the Pacific coast, where replaced from Sitka south (and probably farther northward) by *P. rufescens* Towns.

"Sp. Char. Above yellowish olivaceous brown; top of head purer brown, not very different in tint. Chin and throat dark sooty-brown. Sides of head white. Beneath white; sides and anal region light brownish chestnut. No whitish on wings or tail. Tail nearly even, or slightly emarginate and rounded. Lateral feathers about .20 shortest. Length about 5 inches; wing, 2.40; tail, 2.66."* (*Hist. N. Am. B.*)

This species can only be considered the merest straggler to the extreme northern portion of the State. The author has never met with it alive, and therefore knows nothing of its habits from personal observation.

Mr. Nelson informs us (see page 95 of his list) that Dr. J. W. Velie took a single specimen at Rock Island, but at what date it is not stated, and I learn from Mr. Coale's memoranda, that Dr. Hoy obtained one at Racine, Wisconsin, in January, 1882.

*Five specimens from Maine, Nova Scotia, and Labrador, measure as follows: Wing, 2.50–2.55 (average, 2.52); tail, 2.40–2.70; tarsus, .62–.70.

Subfamily SITTINÆ.—The Nuthatches.

The *Sittinæ* include a single American genus, *Sitta*, which is represented by numerous species in Europe and Asia. The allied genus *Sittella* belongs to Australia.

Genus SITTA Linnæus.

Sitta Linnæus, Syst. Nat. ed. 10, i, 1758, p. 115. Type, *S. europæa* Linn.

"Gen. Char. Bill subulate, acutely pointed, compressed, about as long as the head; culmen and commissure nearly straight; gonys convex and ascending; nostrils covered by a tuft of bristles directed forward. Tarsi stout, scutellate, about equal to the middle toe, much shorter than the hinder, the claw of which is half the total length. Outer lateral toe much longer than inner, and nearly equal to the middle. Tail very short, broad, and nearly even; the feathers soft and truncate. Wings reaching nearly to the end of the tail, long and acute, the first primary one third (or less) the third, or longest. Iris brown. Nest in holes of trees. Eggs white, spotted with reddish." (*Hist. N. Am. B.*)

Species.

Common Characters. Above plain bluish gray, the crown different in color (black, plumbeous, or light brown); tail and wings varied, more or less (the wings slightly), with black and white; beneath chiefly plain whitish, rusty, or dull buffy.

a^1 Crown glossy black in the male, plumbeous in the female; a broad white superciliary stripe.

1. **S. carolinensis.** Wing more than 3.30. Whole side of head and most of lower parts pure white, the lower tail coverts spotted with chestnut-rufous; tertials marked with black. *Male* with entire pileum and cervix glossy black; *female* with pileum dusky plumbeous, the cervix black.
2. **S. canadensis.** Wing less than 3 inches. Side of head with a broad black stripe; lower parts, except throat, light rusty, or ochraceous; tertials plain grayish. *Male* with pileum and cervix glossy black, *female* with the same parts dark plumbeous.

a^2 Crown light brown. Sexes alike.

3. **S. pusilla.** Pileum light brown, down to the eyes, the lores and postocular stripe somewhat darker; a conspicuous cervical spot of white; lower parts buffy. *Young* with the crown grayish, the wing-coverts edged with light fulvous. Wing about 2.60.

The Brown-headed Nuthatch (*S. pusilla*), is a species belonging to the Southern States, where it is abundant from Louisiana and Florida to lower Maryland. It has been taken in the vicinity of St. Louis, Missouri, and also in Michigan and Ohio; therefore, its presence in the southern part of Illinois, especially among the pine woods which there occur in certain localities, is to be anticipated.

Sitta carolinensis Lath.

WHITE-BELLIED NUTHATCH.

Popular synonyms.—Tomtit; Blue Sapsucker.

Sitta carolinensis LATH. Ind. Orn. i, 1790, 262.—WILS. Am. Orn. i, 1808, 10, pl. 2, fig. 3.—NUTT. Man. i, 1832, 581.—AUD. Orn. Biog. ii, 1834, 299; v, 1839, 473, pl. 152; Synop. 1839, 167: B. Am. iv, 1842, 175, pl. 247.—BAIRD, B. N. Am. 1858, 374; Cat. N. Am. B. 1859, No. 277; Review, 1864, 86.—COUES, Key, 1872, 83; Check List, 1873, No. 38; 2d ed. 1882, No. 57; B. N. W. 1874, 24.—B. B. & R. Hist. N. Am. B. i, 1874, 114, pl. 8, figs. 1, 2.—RIDGW. Nom. N. Am. B. 1881, No. 51.

HAB. Eastern United States and British Provinces. (Replaced in western United States by the more slender billed, duller colored form, *S. carolinensis aculeata.*)

This well-known bird is abundant throughout the State, and is a permanent resident everywhere except perhaps in the extreme northern counties. In the South it breeds very early, the writer having observed, on April 19, 1883, a female feeding well-feathered young in a knot-hole of a small white-oak tree (about 30 feet from the ground). A week later the tree was cut down, but the young had flown. This was at Wheatland, Indiana, but there is no doubt that the species breeds equally early in corresponding latitudes in Illinois.

Sitta canadensis Linn.

RED-BELLIED NUTHATCH.

Popular synonym.—Canada Nuthatch.

Sitta canadensis LINN. S. N. ed. 12, i, 1766, 177.—NUTT. Man. i, 1832, 583; 2d ed. i, 1840, 697.—AUD. Orn. Biog. ii, 1834, 24, pl. 105; synop. 1839, 167; B. Am. iv, 1842, 179, pl. 248.—BAIRD, B. N. Am. 1858, 376; Cat. N. Am. B. 1859, No. 279; Review, 1864, 87. COUES, Key, 1872, 83; Check List, 1873, No. 39; 2d ed. 1882, No. 59; B. N. W. 1874, 25; B. Col. Val. 1878, 136.—B. B. & R. Hist. N. A. B. i, 1874, 118, pl. 8, fig. 7.—RIDGW. Nom. N. Am. B. 1881, No. 52.

Sitta varia, BARTR. Trav. 1791, 289 bis.—WILS. Am. Orn. i, 1808, 40, pl. 2, fig. 4.

HAB Northern North America, to the limit of timber; breeding chiefly north of the United States (except in elevated mountain regions); Eastern United States chiefly in winter.

While this species breeds sparingly in the extreme northern counties of the State, it is only a winter visitor to the southern portion. Indeed, its appearance there is both infrequent and irregular; at least this is the writer's experience in Wabash and Richland counties. During winter it is semi-gregarious, roving in scattered troops

through the woods, and making its presence known, when it cannot be seen, by its penny-trumpet *toot, toot,*—a very peculiar note, totally different from that of its larger white-bellied relative (*S. carolinensis*).

Mr. Nelson makes the following reference to this species in his list of the birds of northeastern Illinois:

"A rare summer resident. I found a pair near Chicago with full grown young the first of July, and Mr. Rice observed a pair feeding unfledged young the last of April, 1874, at Evanston. The excavation containing the nest was in a tree, standing on one of the principal streets of the town. It was about twenty feet from the ground. The young were thrusting their heads out of the hole and clamoring for food, thus attracting his attention when they would otherwise have been unnoticed."

Family CERTHIIDÆ.—The Creepers.

Characters. Bill slender and arched; hind toe longer than middle toe, the claw lengthened and strongly arched. Tail lengthened, graduated, the feathers stiff and acuminate at tips.

The above brief diagnosis is sufficient to characterize the family *Certhiidæ* if we exclude from it the European genus *Tichodroma*, which differs in short, even tail, with feathers broad and rounded at ends, and in other characters. As thus restricted, the family includes only one genus, *Certhia*, the single North American species of which is quite circumpolar, though modified into more or less distinct geographical races in different parts of its habitat.

Genus CERTHIA Linnæus.

Certhia Linnæus, Syst. Nat. 10th ed. 1758, 112. Type, *C. familiaris* Linn.

"Gen. Char. Plumage soft and loose. Bill as long as head, not notched, compressed; all its lateral outlines decurved. Nostrils not overhung by feathers, linear, with an incumbent thickened scale, as in *Troglodytes*. No rictal bristles, and the loral and frontal feathers smooth, without bristly shafts. Tarsus scutellate anteriorly, shorter than middle toe, which again is shorter than hind toe. All claws very long, much curved and compressed; outer lateral toe much the longer; basal joint of middle toe entirely adherent to adjacent ones. Wings rather pointed, about equal to the tail, the feathers of which are much pointed, with stiffened shafts. Primaries ten; first less than half the second. Nest in holes of trees; eggs white, sprinkled with reddish." (*Hist. N. Am. B.*)

The genus *Certhia* is readily distinguished by the decurved, compressed bill; absence of notch and bristles; exposed linear nostrils with incumbent scales; connate middle toe, very long claws, short tarsi, pointed and stiffened tail feathers, etc.

Certhia familiaris americana (Bonap.)

BROWN CREEPER.

Popular synonym.—American Tree Creeper.

Certhia familiaris Wils. Am. Orn. i, 1808, 122, pl. 7, fig. 1.—Nutt. Man. i, 1832, 585.—Aud. Orn. Biog. v. 1839, 158, pl. 415; Synop. 1839, 72; B. Am. ii, 1841, 109, pl. 115.—Coues, Key, 1872, 84; Check List, 1873, No. 42; 2d ed. 1882, No. 62; B. N. W. 1874, 26, 230; B. Col. Val. 1878, 145.

Certhia rufa BARTR. Trav. Fla. 1791, 289 bis (*nomen nudum*).—COUES, Pr. Phil. Sc 1875, 347.

Certhia familiaris rufa RIDGW. Nom. N. Am. B. 1881, No. 55.

Certhia americana BONAP. Comp. List, 1838, 11.—NUTT. Man. i, 2d ed. 1840, 701.—BAIRD, B. N. Am. 1858, 372; Cat. N. Am. B. 1859, No. 275; Review, 1864, 89.

Certhia familiaris B. B. & R. Hist. N. Am. B. i, 1874, 125, pl. 8, fig. 11.

HAB. Northern and eastern North America, breeding from northern border of United States northward. (Represented in the Rocky Mountain region by the grayer race *montana*, and along the Pacific coast by the rusty colored *occidentalis*.)

"SP. CHAR. Bill about the length of the head. Above dark brown, with a slightly rufous shade, each feather streaked centrally, but not abruptly, with whitish; rump rusty. Beneath almost silky white; the under tail-coverts with a faint rusty tinge. A white streak over the eye; the ear-coverts streaked with whitish. Tail feathers brown centrally, the edges paler yellowish-brown. Wings with a transverse bar of pale reddish white across both webs. Length, 5.50; wing, 2.60; tail, 2.90.

"*Young*. Resembling the adult, but streaks above indistinct, and the feathers there tipped indistinctly with blackish; the rufous restricted to the upper tail-coverts. Breast and jugulum with very minute blackish wavings or indistinct bars." (*Hist. N. Am. B.*)

This very inconspicuous little bird is probably known to few besides the special student of ornithology and the collector. He is a tiny brown-streaked fellow, who may occasionally be seen during the colder parts of the year, nimbly creeping up the trunks of trees, ascending in more or less of a spiral, and when the first limbs are reached flying to the foot of another tree and repeating the performance. If too closely approached he manages to keep on the side opposite the observer, and should the latter attempt to go around he moves also—keeping the tree always between.

The nest is normally placed behind loose plates of semi-detached bark, on the trunk of a tree, and is composed chiefly of the fine inner bark of trees. It is so situated that the overhanging bark forms a shelter from the rain, and the loose and irregular character of the mass of strips and fibers in which the small nest is hollowed out, so effectually conceals it from the hungry or curious eye, that it has rarely been seen.

Family TROGLODYTIDÆ.—The Wrens and Mocking-Thrushes.

Characters. Anterior covering of tarsus distinctly scutellate. Bill slender, sometimes lenghtened and more or less arched, the culmen more or less convex. Wing rounded with the first quill well developed, projecting beyond the tips of the primary-coverts.

Although the Mocking-Thrushes present several strongly marked characters not shared by the true Wrens, we are compelled for the present to place them in the same family. There can be little doubt, however, that they should constitute a family (*Mimidæ*) by themselves.

The two so-called subfamilies may be distinguished by the following characters:—

Troglodytinæ. No rictal bristles. Inner toe united to the middle by at least half of its basal phalanx. Wing less than 3. 50 inches.

Miminæ. Rictal bristles well developed. Inner toe wholly separated at the base from the middle toe. Wing more than 3.50 inches.

Subfamily Troglodytinæ.—The Wrens.

"Char. Rictal bristles wanting; the loral feathers with bristly points; the frontal feathers generally not reaching to nostrils. Nostrils variable, exposed or not covered by feathers, and generally overhung by a scale-like membrane. Bill usually without notch (except in some Middle American genera). Wings much rounded, about equal to tail, which is graduated. Primaries ten, the first generally about half the second. Basal joint of middle toe usually united to half the basal joint of inner, and the whole of that of the outer, or more. Lateral toes about equal, or the outer a little the longer. Tarsi scutellate.

"The impossibility of defining any large group of animals, so as to separate it stringently and abruptly from all others, is well understood among naturalists; and the *Troglodytidæ* form no exception to the rule. Some bear so close a resemblance to the Mocking-Thrushes as to have been combined with them; while others again exhibit a close approximation to other subfamilies. The general affinities of the family, however, appear to be to the *Turdidæ*, and one of the best characters for separating the two families appears to exist in the structure of the feet.

"In the *Turdidæ* the basal joint of the outer lateral toe is united to the middle toe, sometimes only a part of it; and the inner toe is cleft almost to its very base, so as to be opposable to the hind toe, separate from the others. In the *Troglodytidæ*, on the contrary, the inner toe is united by half its basal joint to the middle toe, sometimes by the whole of this joint; and the second joint of the outer enters wholly or partially into this union, instead of the basal joint only. In addition to this character, the open, exposed nostrils, the usually lengthened bill, the generally equal lateral toes, the short rounded wings, the graduated tail, etc., furnish points of distinction." (*Hist. N. Am. B.*)

In several genera which unquestionably belong to this family, (*Salpinctes*, *Campylorhynchus*, etc.) the postero-lateral plates of the tarsal envelope are divided, much as in the Larks and tracheophone Passeres (*Dendrocolaptidæ* and *Formicariidæ*), and with the Larks, are the only members of the *Oscines* which have these plates thus divided. It will therefore be seen that Sundevall's primary division of the *Oscines* into two groups based upon this character—"*Lamini plantares*," to include those which have these plates undivided (assumed by the author in question to include all oscinine families except the Larks), and "*Scutiplantares*," to include those with these plates divided (including the *Alaudidæ* alone), is hardly warranted by the facts in the case.

North American Genera and Subgenera of **Troglodytinæ.**

a.[1] Wing more than 3.00 inches ..... **Campylorhynchus.**
a.[2] Wing less than 3.00 inches.
  b[1]. Outer toe much longer than the inner.
    c[1]. Culmen equal to tarsus, depressed at base ..... **Catherpes.**
    c[2]. Culmen shorter than tarsus, compressed at base ..... **Salpinctes.**
  b[2]. Outer toe not distinctly longer than the inner.
    c[1]. Tail moderately graduated, or rounded, the tips of the lower coverts falling far short of the ends of the lateral rectrices.
      d.[1] Gonys concave, the maxilla decidedly, though gently, decurved at tip ..... **Thryothorus.**
        e[1]. Tail much shorter than wing. Bill stouter, the culmen moderately compressed at base ..... (Subgenus *Thryothorus*).
        e[2]. Tail equal to or longer than wing. Bill slender, the culmen much compressed at base ..... (Subgenus *Thryomanes*).
      d[2]. Gonys straight, the maxilla scarcely decurved at tip ..... **Troglodytes.**
        e[1]. Culmen decidedly curved, the bill stouter. Tail nearly or quite as long as wing ..... (Subgenus *Troglodytes*).
        e[2]. Culmen straight, the bill subulate. Tail much shorter than wing ..... (Subgenus *Anorthoura*).

c^2. Tail much graduated, the lower coverts reaching to tips of lateral rectrices..... Cistothorus).

d^1. Bill much shorter than head, stout, the gonys straight..... (Subgenus *Cistothorus*).

d^2. Bill nearly as long as the head, slender, the gonys slightly concave..... (Subgenus *Telmatodytes*).

Genus THRYOTHORUS Vieillot.

Thryothorus Vieillot, Analyse, 1816, 45. Type, *Troglodytes arundinaceus* Vieill.,= *Sylvia ludoviciana* Lath.

Thryomanes Scl. Cat. Am. B. 1861, 22. Type, *Troglodytes bewickii* Aud.

"Gen. Char. Bill compressed, rather slender; height about one fourth the length above. Culmen and commissure gently curved throughout; gonys straight; tip very obsoletely notched. Nostrils in the lower edge of anterior extremity of the nasal groove narrowly elliptical, overhung by a stiff scale-like roof of the thickened membrane of the upper part of the nasal groove, the crescentic edge rounded. The septum of nostrils imperforate; the posterior part of the nasal cavity with a short septum projecting into it parallel with the central, not perpendicular as in *Microcerculus*. Wings and tail about equal, the latter moderately rounded; the first primary more than half the second, about half the longest. Tarsi rather short, scarcely exceeding middle toe. Anterior scutellæ distinct, rest of each side of tarsi in a continuous plate. Lateral toes equal." (*Hist. N. Am. B.*)

Our species may be distinguished as follows:

a^1. Tail feathers rufous, barred with black. Lower parts more or less ochraceous. Tail much shorter than wing..... T. ludovicianus.

a^2. Tail feathers (except middle pair) blackish, with pale gray terminal blotches. Lower parts pale grayish. Tail about equal to wing in length. T. bewickii.

Subgenus Thryothorus Vieillot.

Thryothorus ludovicianus (Lath.)

CAROLINA WREN.

Popular synonyms.—Great Carolina Wren; Mocking Wren; Large Wood Wren.

Sylvia ludoviciana Lath. Ind. Orn. ii, 1790, 548.

Troglodytes ludovicianus Licht. Verz. Doubl. 1823, 35.—Nutt. Man. i, 1832, 429.—Aud. Orn. Biog. i, 1831, 399, pl. 78; Synop. 1839, 74; B. Am. ii, 1841, 116, pl. 117.

Thryothorus ludovicianus Bonap. Comp. List, 1838, 11.—Baird, B. N. Am. 1858, 361; Cat. N. Am. B. 1859, No. 265; Review, 1864, 123.—Coues, Key, 1872, 86; Check List, 1873, No. 47; 2d ed. 1882, No. 68; B. N. W. 1874, 29; B. Col. Val. 1878, 168.—B. B. & R. Hist. N. Am. B. i, 1874, 142, pl. 9, fig. 1.—Ridgw. Nom. Am. B. 1881, No. 60.

Motacilla caroliniana Bartr.—*Certhia caroliniana* Wils. Am. Orn. ii, 1810, 61, pl. 12, fig. 5.

Hab. Eastern United States, chiefly south of 40°; resident throughout.

"Sp. Char. Exposed portion of the bill shorter than the head. Above reddish brown, most vivid on the rump. A whitish streak over the eye, bordered above with dark brown. Throat whitish; rest of under parts pale yellow-rusty, darkest towards the under tail-coverts, which are conspicuously barred with black. Exposed surface of the wings and tail (including the upper coverts) barred throughout with brown, the outer edges of tail feathers and quills showing series of alternating whitish and dusky spots. Legs flesh-colored. Length, 6 inches; wing, 2.60; tail, 2.45." (*Hist. N. Am. B.*)

An adult ♂ from Brookville, Indiana (No. 386, coll. A. W. Butler; Feb. 10, 1881), has the sides and flanks distinctly barred, as in a Wheatland specimen, while the upper part of the breast is marked, entirely across, with rather scattered and small, though very distinct, dusky specks. The chin and upper part of the throat are dull white, as are also the lower breast and upper abdomen, centrally; but the jugulum, sides, and flanks are ochraceous, the flanks even tinged with rufous. The measurements are, wing 2.40, tail 2.20, culmen .65, tarsus .85.

In southern Illinois this bird is exceedingly abundant, frequenting chiefly the woods along streams, and rarely found about dwellings, although he occasionally visits the vicinity of farm houses and even the outskirts of towns; but he seldom if ever fixes his habitation in close proximity to the abodes of man. His nest is built in hollow stumps or logs, or knotholes, in the woods, and is exceedingly difficult to find. His notes are varied, and are all characterized by great power—almost, in fact, disproportionate to the size of the bird, even for one of this family. His clear whistling song, although rather monotonous, is sweet and of unexcelled power, being quite as loud as the strongest notes of the Mocking-bird or Brown Thrasher —in fact they are probably more so, and can be heard for a greater distance.

On clear, cold days in midwinter, when the earth is snow-clad, and the air is still and crisp, there may be heard, from the edge of the woods, perhaps half a mile away, an exceedingly loud cheerful whistling song—*willy-way' willy-way' willy-way'*—repeated at short intervals, and resembling somewhat in accent the whistle of the Cardinal Grosbeak, but far louder, and altogether a finer performance. This is the song of the Carolina Wren. Some have called him the Mocking Wren; but I have never heard one sing any song but his own, and hundreds of times has his characteristic melody greeted my ears.

The Carolina Wren is a very prolific bird, raising regularly two, and not unfrequently three broods during the season, and hatching on an average five young each brood.

Mr. Nelson records in his paper (page 34), a double nest of this species found by Mr. John L. Ridgway, at Mount Carmel, "which was obtained by him in the bottoms. The two nests were of about equal size and composed principally of moss and grass. The contiguous sides were slightly united. Both nests were constructed the same season, and when found one side contained half fledged young."

Subgenus **Thryomanes** Sclater.

Thryothorus bewickii (Aud.)

BEWICK'S WREN.

Popular synonyms.—Long-tailed House Wren; Long-tailed Wren.

Troglodytes bewickii AUD. Orn. Biog. i, 1831. 96. pl. 18; Synop. 1839, 74; B. Am. ii, 1841, 120, pl. 118.—NUTT. Man. i, 1832, 434; 2d ed. i, 1840, 489.

Thryothorus bewickii BAIRD, B. N. Am. 1858, 363 (*Thriothorus*); Cat. N. Am. B. 1859, No. 267; Review, 1864, 126.—COUES, Key, 1872, 86; Check List, 1873, No. 48; 2d ed. 1882, No. 71; B. N. W. 1874, 31; B. Col. Val. 1878, 169.—B. B. & R. Hist. N. Am. B. i, 1874, 145, pl. 9, fig. 3.

Thryomanes bewicki RIDGW. Nom. N. Am. B. 1881, No. 61.

HAB. Eastern United States, chiefly west of the Alleghanies. In the interior, north to Minnesota; eastward, north to New Jersey. Very irregularly distributed, being apparently unknown in many localities within the limits of its general range. Not recorded from most portions of the Atlantic coast. Migratory in the northern parts of its range.

"SP. CHAR. Above dark rufous-brown; rump and middle tail-feathers sometimes a little paler, and very slightly tinged with gray, and together with the exposed surface of secondaries distinctly barred with dusky. Beneath soiled plumbeous-whitish; flanks brown. Crissum banded; ground color of quills and tail feathers brownish black. Length, 5.50; wing, 2.25; tail, 2.50. Length from nostril, 39; along gape, 70."* (*Hist. N. Am. B.*)

In most parts of southern Illinois, this is *the* "House Wren" *par excellence;* and even in localities where the true House Wren (*Troglodytes aedon*) occurs, Bewick's Wren is far the more numerous of the two. In Wabash county, the writer has never seen nor even heard a *T. aedon;* and in Richland county, where the latter was not uncommon *T. bewickii* was extremely abundant, nesting in all sorts of places about barns, stables and other buildings, while the former was chiefly if not entirely confined to the orchards, where it nested in hollow apple-trees. This was almost invariably the case where both species were found upon the same premises.

No bird more deserves the protection of man than Bewick's Wren. He does not need man's encouragement, for he comes of his own accord and installs himself as a member of the community, wherever it suits his taste. He is found about the cow-shed and barn along with the Pewee and Barn Swallow; he investigates the pig-sty; then explores the garden fence, and finally mounts to the roof and pours forth one of the sweetest songs that ever was

*Eight adults measure as follows: Wing, 2.05–2.25; tail, 2.10–2.40; culmen, .50–.55; tarsus, .62–.75.

heard. Not a voluble gabble, like the House Wren's merry roundelay, but a fine, clear, bold song, uttered as the singer sits with head thrown back and long tail pendent,—a song which may be heard a quarter of a mile or more, and in comparison with which the faint chant of the Song Sparrow sinks into insignificance. The ordinary note is a soft low *plit*, uttered as the bird hops about, its long tail carried erect or even leaning forward, and jerked to one side at short intervals. In its movements it is altogether more deliberate than either *T. ludovicianus* or *T. aedon*, but nothing can excel it in quickness when it is pursued.

The nest of Bewick's Wren is placed in all sorts of odd places. Usually it is in a mortise-hole of a beam or joist, or some well-concealed corner. One was beneath the board covering of an ash-hopper; another, in a joint of stovepipe which lay horizontally across two joists in the garret of a smoke-house; a third was behind the weather-boarding of an ice-house, while a fourth was in the bottom of the conical portion of a quail-net that had been hung up against the inner side of a buggy shed. None of these nests would have been found had not the bird been seen to enter.

The nest is generally very bulky, though its size is regulated by that of the cavity in which it is placed. Its materials consist of sticks, straw, coarse feathers, fine chips, etc., matted together with spiders' webs, and lined with tow and soft feathers of barnyard fowls. The eggs are usually seven to nine in number, but occasionally more,* and are white, rather sparsely speckled round the larger end with brown.

Mr. Nelson records the breeding of this species in the extreme northern part of the State, as follows:

"A pair of these birds appeared in a vacant lot in Chicago the first of June, 1876, and taking possession of a convenient corner in the roof of an arbor proceeded to raise their young. At intervals through the day the male would mount to the top of some house, or the topmost twig of a tree in the vicinity, and sing for an hour or more. The family suddenly left about the middle of July."

*Mrs. Mary A. Turner, of Mt. Carmel, sent to the National Museum a nest of this species containing eleven eggs.

GENUS TROGLODYTES VIEILLOT.

Troglodytes VIEILLOT, Ois. Am. Sept. ii, 1807, 52. Type, *T. aedon* VIEILL.
Anorthoura RENNIE, Montagu's Orn. Dict. 1831. Type, *Motacilla troglodytes* LINN.

The characters of this genus are sufficiently indicated in the synopsis on page 89. They come very close to those of *Thryothorus*, the nostrils, especially being linear and overhung by a scale. In this respect both differ from *Thryophilus* of Middle America. The bill is shorter or not longer than the head; straight, slender, and without notch. The tail is graduated, and shorter than the much rounded wings, the feathers narrow. The light superciliary line of *Thryothorus* is almost entirely wanting in the North American species.

Our two species may be thus distinguished:

a^1. Bill rather stout, with decidedly convex culmen. Tail nearly or quite as long as wing. Beneath brownish white, the crissum and flanks barred with dusky and rusty ..... **T. aedon.**

a^2. Bill slender, the culmen nearly straight. Tail decidedly shorter than wing. Beneath pale brown, whole abdomen, sides, flanks and crissum barred with dusky ..... **T. hyemalis.**

Subgenus Troglodytes Vieillot.

Troglodytes aedon Vieill.

HOUSE WREN.

a. aedon. House Wren.

Popular synonyms.—Short-tailed House Wren; Wood Wren.

Motacilla domestica BARTR. Trav. 1791, 291 (*nomen nudum*).
Sylvia domestica WILS. Am. Orn. i, 1808, 129, pl. 8, fig. 3.
Troglodytes domestica COUES, Pr. Phila. Ac. 1875, 351.
Troglodytes domesticus COUES, 2d Check List, 1882, No. 74,
Troglodytes aedon VIEILL. Ois. Am. Sept. ii, 1807, 52, pl. 107.—AUD. Orn. Biog. i, 427; v, 470, pl. 83; Synop. 1839, 75; B. Am. ii, 1841, 125, pl, 120.—NUTT. Man. i, 2d ed. 1840, 475.—BAIRD, B. N. Am. 1858, 367; Cat. N. Am. B. 1859, No. 270; Review, 1864, 138.—COUES, Key 1872, 86; Check List, 1873, No. 49; B. N. W. 1874, 32.—B. B. & R. Hist. N. Am. B. i, 1874, 149, pl. 9, fig. 5.—RIDGW. Nom. N. Am. B. 1881, No. 63.
Troglodytes fulvus NUTT. Man. i, 1832, 422.
Troglodytes americanus AUD. Orn. Biog. ii, 1834, 452, pl. 179; Synop. 75; B. Am. ii, 123, pl, 119.—BAIRD, B. N. Am. 368; Cat. N. Am. B. 180, 272. Review, 1864, 141.

HAB. Eastern United States and British Provinces; in the former, chiefly northward and eastward? (In southern Illinois chiefly replaced by *Thryothorus bewickii*.)

b. parkmanii. Parkman's Wren.

Popular synonyms.—Western Wood Wren; Western House Wren.

Troglodytes parkmanii AUD. B. Am. ii, 1841, 133, pl. 122.—NUTT. Man. 2d ed. i, 1840, 483.—BAIRD, B. N. Am. 1858, 367; Cat. N. Am. B. 1859, No. 271; Review, 1864, 140.
Troglodytes aedon var. *parkmanni* COUES, Key, 1872, 87; Check List, 1873, No. 49*a*; B. N. W. 1874, 32.—B. B. & R., Hist. N. Am. B. i, 1874, 153.
Troglodytes aedon parkmanni RIDGW. Nom. N. Am. B. 1881, No. 63*a*.
Troglodytes domesticus parkmani COUES, B. Col. Val. 1878, 171; 2d Check List, 1882. No. 75.

HAB. Western United States, east to the border of the wooded region. (Occasionally straggling to Illinois.)

"SP. CHAR. Tail and wings about equal. Bill shorter than the head. Above reddish brown, darker towards the head, brighter on the rump. The feathers everywhere, except on the head and neck, barred with dusky; obscurely so on the back, and still less on the rump. All the tail feathers barred from the base; the contrast more vivid on the exterior ones. Beneath pale fulvous-white, tinged with light brownish across the breast: the posterior parts rather dark brown, obscurely banded. Under tail-coverts whitish, with dusky bars. An indistinct line over the eye, eyelids, and loral region whitish. Cheeks brown, streaked with whitish. Length, 4.90; wing, 2.08; tail, 2.00." (*Hist. N. Am. B.*)

Two races of the House Wren occur in Illinois which may be distinguished as follows:

HOUSE WREN (*T. aedon*). Above decidedly rusty on the rump and tail, the back umber-brown, and *usually* not distinctly barred (frequently entirely uniform); *in winter*, deep reddish umber-brown above, with only the wings and tail distinctly barred. Wing, 1.90—2.15 (2.02; tail, 1.72—2.08 (1.85); culmen, .46—.52 (.49); bill from nostril, .32—.37 (.34); tarsus, .60—.70 (.65); middle toe, .45—.54 (.50).

PARKMAN'S WREN (*T. aedon parkmanii*). Above rather grayish brown, the rump and tail slightly more rusty, and the back and rump generally very distinctly barred with dusky (very rarely plain). *In winter*, above dull brown (deeper than in summer), the back still distinctly barred. Wing, 2.—2.25 (2.09); tail, 1.85—2.12 (1.98); culmen, .45—.55 (.49); bill from nostril, .30—.40 (.35); tarsus, .60.—70 (.66); middle toe, .47—.54 (.50).

The two races are by no means well defined, except in extreme cases, but there is an appreciable *average* difference, as above detailed, distinguishing eastern and western specimens; nor are their relative abundance and distribution within the State well made out.

Although a bird of very wide geographical range, the House Wren is, for some reason or another, very rare in many parts of southern Illinois. Indeed, during the writer's residence in Wabash county, he never even heard the note of an individual of this species, its place being taken entirely by Bewick's Wren. In the neighboring county of Richland, however, the House Wren is not uncommon in some localities, but the other species still largely preponderates in numbers; and the same is the case in Knox county, Indiana, in all localities where the writer has been able to make observations. To the northward, the present species gradually increases in abundance, until finally, in the northern counties of the State the proportional representation of the two is reversed.

Although having had many opportunities of studying the House Wren in the Atlantic States, where it is a very abundant bird, the writer became most familiar with him in the Far West, where all

wooded localities, excepting coniferous forests, were his chosen abode, and where he was equally at home in the cottonwoods of the river valleys, or the aspens just below the timber-line on lofty mountains. He was there everywhere the same quick, saucy little fellow, and in the spring and summer an incessant and voluble songster.

The following very interesting notes regarding the length of time required for the bringing forth of a brood of this species, were communicated to Professor Baird by Col. S. T. Walker, of Milton, Florida:

"In looking over an old memorandum book the other day, I came across the following notes made in 1866, concerning the nesting of the House Wren. I was sick at the time, and watched the whole proceeding, from the laying of the first stick to the conclusion. The nest was placed in one of the pigeon-holes of my desk, and the birds effected an entrance to the room through sundry cracks in the log cabin.

"Nest begun.....April 15th
"Nest completed and first egg laid.....April 27th
"Last egg laid.....May 3d
"Began incubation.....May 4th
"Hatching completed.....May 18th
"Young began to fly.....May 27th
"Young left the nest.....June 1st
"Total time occupied.....47 days."

Subgenus **Anorthoura** Rennie.

Troglodytes hiemalis Vieill.

WINTER WREN.

Popular synonyms.—Bunty Wren; Little Log Wren.

Sylvia troglodytes Wils. Am. Orn. i, 1808, 139, pl. 8, fig. 6 (not of Linn.).
Anorthura troglodytes Coues, Key, 1872, 87.
Troglodytes hiemalis Vieill. Nouv. Dict. N. H. xxxiv, 1819, 514.—Sw. & Rich. F. B. A, ii, 1831, 318.—Aud. Orn. Biog. iv, 1838, 430, pl, 360; Synop. 1839, 76; B. Am. ii, 1841, 128, pl, 121.—Nutt. Man. 2d ed. i, 1840, 481.—Baird, B. N. Am. 1858, 369; Cat. N. Am. 1859, No. 273; Review, 1864, 144.
Troglodytes europæus Nutt. Man. i, 1832, 427 (not of Leach).
Anorthura troglodytes var. *hyemalis* Coues, Key, 1872, 351; Check List, 1873, No. 50.
Troglodytes parvulus var. *hyemalis* B. B. & R. Hist. N. Am. B. i, 1874, 155, pl, 9, fig. 9.
Anorthura troglodytes hyemalis Ridgw. Nom. N. Am. B. 1881, No. 65.—Coues, 2d Check List, 1882, No. 76 ("*hiemalis.*")

HAB. North America east of the Rocky Mountains, breeding chiefly north of the United States; south in winter nearly or quite to the Gulf coast.

"SP. CHAR. Bill very straight, slender, and conical; shorter than the head. Tail considerably shorter than the wings, which reach to its middle. Upper parts reddish brown; becoming brighter to the rump and tail; everywhere, except on the head and upper part of the back, with transverse bars of dusky and of lighter. Scapulars and wing-coverts with spots of white. Beneath pale reddish brown, barred on the posterior half of the body with dusky and whitish, and spotted with white more anteriorly; outer web of primaries similarly spotted with pale brownish white. An indistinct pale line over the eye. Length, about 4 inches; wing, 1.66; tail, 1.26." (*Hist. N. Am. B.*)

"*First Plumage*: male. Remiges, rectrices, etc., as in adult; rest of upper parts dark reddish brown, becoming more dusky anteriorly; no trace of bars except on wings and tail. Beneath dull smoky brown, with a strong ferruginous suffusion on sides, anal region, and crissum; every feather of under parts with a bar of dark brown. From a specimen in my collection taken at Upton, Me., August 4, 1874." (BREWSTER, Bull. Nutt. Orn. Club, Jan., 1878, p. 22.)

This little bird visits Illinois only at the approach of cold weather, and leaves with the advent of spring. He frequents chiefly the woods, more especially in bottom lands, where he may be seen about old logs, hopping nimbly in and out among the knot-holes and other hollow places, then flitting, like a brown butterfly, to another place of refuge on the too near approach of an intruder. Occasionally he may be seen about wood-piles or lumber-yards within towns, but he is never on the same degree of intimacy with man as the House Wren, partaking, in his sylvan proclivities, more of the nature of his larger and brighter-colored relative, the Carolina Wren.

GENUS CISTOTHORUS CABANIS.

Cistothorus CABANIS, Mus. Hein. i, 1850, 77. Type, *Troglodytes stellaris* LICHT.

Telmatodytes CABANIS, Mus. Hein. i, 1850, 78. Type, *Thryothorus arundinaceus* VIEILL.,=*Certhia palustris* WILS.)

"GEN. CHAR. Bill about as long as the head or much shorter, much compressed, not notched, gently decurved from the middle; the gonys slightly concave or straight. Toes reaching to the end of the tail. Tarsus longer than the middle toe. Hind toe longer than the lateral, shorter than the middle. Lateral toes about equal. Hind toe longer than or equal to its digit. Wings rather longer than the tail, all the feathers of which are much graduated; the lateral only two thirds the middle. The feathers narrow. Back black, conspicuously streaked with white.

"Of this genus there are two sections, *Cistothorus* proper and *Telmatodytes*, the diagnoses of which have already been given. The two North American species present the feature, unique among our Wrens, of white streaks on the back.

"**A.** **Cistothorus.** Bill half length of head. No white superciliary streak. Head and rump and back streaked with white. Tail dusky, barred with brown.....*C. stellaris.*

"**B.** **Telmatodytes.** Bill length of head. A white superciliary stripe. Back alone streaked with white. Tail feathers black, barred with whitish. *C. palustris.*"

—(*Hist. N. Am. B.*)

Subgenus **Cistothorus** Cabanis.

Cistothorus stellaris (Licht)

SHORT-BILLED MARSH WREN.

Troglodytes stellaris "Licht." Naum. Vog. Deutschl. iii, 1823, 724.

Cistothorus stellaris Cab. Mus. Hein. i, 1850, 77.—Baird, B. N. Am. 1858, 365; Cat. N. Am. B. 1859, No. 269; Review, 1864, 146.—Coues, Key, 1872, 88; Check List, 1873, No. 52; 2d ed. 1882, No. 81; B. N. W. 1874, 36; B. Col. Val. 1878, 180.—B. B. & R. Hist. N. Am. B. i, 1874, 159, pl. 9, fig. 7.—Ridgw. Nom. N. Am. B. 1881, No. 68.

Troglodytes brevirostris Nutt. Man. i, 1832, 426; 2d ed. i, 1840, 493.—Aud. Orn. Biog. ii, 1834, 427; Synop. 1839, 77; B. Am. ii, 1841, 138, pl. 124.

Hab. Eastern United States, north to Massachusetts and Manitoba, west to the Great Plains and even to Utah; winters in the Southern States.

"Sp. Char. Bill very short, scarcely half the length of the head. Wing and tail about equal. Hinder part of the crown and the scapular and interscapular region of the back and rump almost black, streaked with white. Tail dusky, the feathers barred throughout with brown (the color grayish on the under surface). Beneath white, the sides, upper part of breast, and under tail-coverts reddish brown. Length, 4.50; wing, 1.75; tail, 1.75." (*Hist. N. Am. B.*)

"*Autumnal plumage:* young male. Above similar to adult, but darker, especially on nape and pileum. Throat and abdomen light buff; breast, sides, anal region, and crissum rusty-brown, paler and with white tippings to the feathers anteriorly. From a specimen in my collection shot at Cambridge, Mass., September 19, 1870." (Brewster, Bull. Nutt. Orn. Club, January, 1878, 22.)

The Short-billed Marsh Wren occurs throughout Illinois, but only in certain favored localities. Mr. Nelson, in his catalogue of the birds of Cook and adjoining counties (p. 94), writes of it as follows:

"Rather common summer resident and generally distributed in suitable places. Breeds last of May. I think the distribution of this species is much more general than is supposed. Owing to the character of the locality in which they are found, and to their shyness, the chances are that they will be overlooked. Before I learned their habits I passed repeatedly through places where I afterwards found they were quite common."

Its favorite resorts are said to be wet meadows, where the grass and sedges grow tall and rank, and in prairie sloughs. The nest, like that of its long-billed relative (*C. palustris*), is fastened to up-

right grass- or sedge-stems, and is of globular form, with the entrance a small hole in the side. The eggs, however, are pure white, without markings, instead of deep chocolate-brown, or densely speckled with the same on a lighter ground.

Subgenus **Telmatodytes** Cabanis.

Cistothorus palustris (Wils.)

LONG-BILLED MARSH WREN.

Popular synonyms.—Grass Wren; Stink-bird (N. E. Ills.)

Certhia palustris Wils. Am. Orn. ii, 1810, 58, pl. 12, fig. 4.

Troglodytes palustris Bonap. Jour. Phila. Ac. iv, 1824, 30.—Sw. & Rich. F. B. A. ii, 1831, 319.—Aud. Orn. Biog. i, 1831, 500, pl. 100: Synop. 1839, 77; B. Am. ii, 1841, 135, pl. 123. —Nutt. Man. i, 1832, 439; 2d ed. i, 1840, 496.

Cistothorus palustris Baird, B. N. Am. 1858, 364; Cat. N. Am. B. 1859, No. 268; Review 1864, 147.—B. B. & R. Hist. N. Am. B., i, 1874, 161, pl. 9, fig. 6.

Telmatodytes palustris Coues, Key, 1872, 87; Check List, 1873, No. 51; 2d ed. 1882, No. 79; B. N. W. 1874, 34; B. Col. Val. 1878, 178 (part).—Ridgw. Nom. N. Am. B. 1881, No. 67.

Hab. Eastern North America, breeding nearly throughout its range, and wintering in the Southern States; accidental in Greenland. (Replaced in the West by the race or subspecies *paludicola*, Baird.)

"Sp. Char. Bill about as long as head. Tail and wing nearly equal. Upper parts of a dull reddish brown, except on the crown, interscapular region, outer surface of tertials, and tail feathers, which are almost black; the first with a median patch like the ground color; the second with short streaks of white, extending round on the sides of the neck; the third indented with brown; the fourth barred with whitish, decreasing in amount from the outer feather, which is marked from the base, to the fifth, where it is confined to the tips; the two middle feathers above like the back, and barred throughout with dusky. Beneath rather pure white, the sides and under tail-coverts of a lighter shade of brown than the back; a white streak over the eye. Length, 5.50; wing, 2.08; tail, 2.00." (*Hist. N. Am. B.*)

The Long-billed Marsh Wren is an abundant bird in suitable localities, which consist of marshes or swamps grown up with rank sedges and grasses, to the upright stems of which its curious nest is attached. The species occurs throughout the State, and sometimes winters in the extreme southern portion. Although usually fastening the nest to upright sedge- or reed-stalks, the writer has found several that were built in small willow trees, at heights varying from six to fifteen feet above high tide. This was in the marshes of the Potomac river, near the foot of Analostan Island, opposite Washington, D. C., where the species is excessively abundant.

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The song of this species resembles somewhat that of the House Wren, but is much less agreeable, having a peculiar sputtering or scolding character.

Mr. Nelson, in his list of the birds of northeastern Illinois, refers to the Long-billed Marsh Wren as follows:

"Abundant summer resident in marshy localities. Arrives the first of May, nests the last of this month to the first of August. I have seen hundreds of the nests of this species, but have yet to see one attached to a bush in the manner described in Baird, Brewer and Ridgway's 'North American Birds' (Vol. 1, p. 162). The nests I have seen have almost invariably been placed in the middle of tall bulrushes, or wild rice, growing upon a more or less submerged marsh, and are supported about two feet above the surface, by being firmly attached to several of the surrounding stalks, something in the manner of the attachment of the Red-winged Blackbird's nest. The structure of the nests agrees with the description in the above-named work, with the exception of mud never being used in nests I have examined. While the female is incubating, the male is almost constantly employed upon the construction of several unfinished nests, until often a pair may boast the possession of a dozen unoccupied tenements. The supernumerary nests are less substantial structures than the one occupied, and are built indifferently of the living or dead grass leaves, the latter being almost exclusively used in the structure occupied."

"In the sedges and cat-tails, which border the placid current as it approaches the lake," writes the author of "Our Birds in their Haunts," "are the breeding haunts of quite a group of birds which frequent the water and the vicinity in this locality. As one glides along these waters in a light skiff, on a fine June morning, admiring the trees, shrubs, vines and wild flowers which adorn the graceful curves of the bluff on either side, from out the sedges and cat-tails there comes the sharp metallic twitter of the Long-billed Marsh Wren (*Telmatodytes palustris*). You strain your eyes to get a glimpse of the utterer of these weird notes, but he is completely concealed in the tall, thick growths, and dodges about so mysteriously that you can scarcely keep the direction of the sounds. There! Now he is in plain sight, clinging sidewise to that huge cat-tail overtopped by its candle-shaped blossom. What a wee bit of a bird he is, seeming scarcely larger than the end of one's thumb, though, from the tip of the bill to the extremity of the tail, he measures some five inches or more; but the head is so thrown up, and the tail so

thrust forward, that he assumes almost the shape of an irregular ring or triangle, and so quite deceives one as to the length of his slender body. * * * His flight is short, and every motion is exceedingly quick and nervous.

"In the tall bleached sedges of the previous year, this Wren is very easily seen in May or early in June. Then he is especially lively, hanging sidewise to the smooth perpendicular culms, or grasping two opposite ones, one in each wiry foot, his legs stretched apart in a horizontal line; or tossing himself up several feet into the air, with head and tail up, he will drop down, with a light and graceful flutter, making his very best attempt at a song as he thus describes an abrupt curve. That song begins with a rather harsh screeping note, followed by a rattling twitter, and ends in a note very much like that with which it began.

"Pulling the boat somewhat into the sedges, we wade among them half way to the knees in water. Here is the nest! About the size of a common cocoanut, it is woven and interlaced by the dried and discolored leaves of the sedges and marsh-grass, intermixed with vegetable down, and sometimes with an abundance of green moss, so as to make the walls quite thick and firm, and is lined with finer materials—perhaps the down from a vacated Duck's nest in the neighborhood, or the feathers of a Coot devoured by the Marsh Hawk; it has a hole in the side, so beset with down as almost to close it up—the artistic structure being hung to the green or dried sedges or marsh-grass only a few inches, or sometimes three or four feet from the water. These nests are often found in large numbers in the same locality, the greater part of them being unoccupied."

Subfamily **Miminæ**.—The Mocking-Thrushes.

The principal characters of this so-called subfamily, have already been given on page 88. The group is probably entitled to family rank, the differences from the true Wrens being very marked. The *Miminæ* have usually been placed in the subfamily *Turdidæ*, but they appear to be even less closely related to the Thrushes than to the Wrens.

As has been stated in "History of North American Birds" (Vol. I., p. 31), the *Miminæ* "have a somewhat thrush-like appearance, but (except in *Oroscoptes*) with longer, much more graduated, and broader tail; short, concave wings, about equal to or shorter than the tail, usually lengthened, sometimes decurved bill without notch, and strongly marked scutellæ on the anterior face of the tarsus. The loral feathers are soft and not ending in bristly points. The colors are dull shades of brown, gray or plumbeous. Most of the species, in addition to a melodious native song, possess the power of imitating the notes of other birds; sometimes, as in the American Mocking-bird, to an eminent degree. All are peculiar to the New World, and the species are much less vagrant than those of the *Turdinæ*,—those of the United States scarcely going beyond its northern boundary; others, again, restricted to small islands in the West Indies, or in the Pacific Ocean."

Analysis of NORTH AMERICAN GENERA.

a.¹ Tail shorter than wing, nearly even.....**Oroscoptes.**
a.² Tail longer than wing much rounded.
  b.¹ Bill equal to or longer than head.....**Harporhynchus.**
    c.¹ Tarsus shorter than culmen. Tail exceeding wing by more than length of tarsus.....(Subgenus *Harporhynchus*).
    c.² Tarsus longer than culmen. Tail exceeding wing by less than length of tarsus.....(Subgenus *Methriopterus*).
  b.² Bill much shorter than head.
    c.¹ Tarsus exceeding middle toe and claw by more than the length of the latter. Commissure longer than middle toe and claw.....**Mimodes.**
    c.² Tarsus exceeding middle toe and claw by less than the length of the latter. Commissure shorter than middle toe and claw.
      d.¹ Tarsal scutellæ very distinct. Gonys straight or even slightly concave. Much white on wings and tail.....**Mimus.**
      d.² Tarsal scutellæ very indistinct, sometimes nearly obsolete. Gonys slightly convex. No white on wings or tail.....**Galeoscoptes.**

Genus HARPORHYNCHUS Cabanis.

Harporhynchus Cabanis, Archiv f. Naturg. 1848, I. 98. Type, *Harpes redivivus* Gamb.
Methriopterus Reich. Av. Syst. Nat. 1850, pl. iv. Type, *Turdus rufus* Linn.

"Gen. Char. Bill from forehead as long as, or much longer than the head; becoming more and more decurved in both jaws as lengthened. No indication of a notch. Rictus with the bristles extending beyond the nostrils. Tarsus long and stout, appreciably exceeding the middle toe and claw, strongly scutellate anteriorly. Wings considerably shorter than tail, much rounded; the first quill more than half the second; fourth or fifth longest. Tail large, much graduated; the feathers firm.

"The species of this genus are all of large size, in fact, embracing the largest of the American slender-billed oscinine birds. All the species differ in structure, varying especially in the length of the bill, as above stated." (*Hist. N. Am. B.*)

The genus, as defined above, is divisible into two well-defined sections, for convenience here termed subgenera (although they are possibly of generic rank), which may be characterized as follows:

1. **Harporhynchus.** Tarsus much shorter than culmen; gonys equal to or longer than middle toe, without claw; tail exceeding the wing by much more than the length of the tarsus. Lower parts wholly immaculate.

2. **Methriopterus.** Tarsus longer than the culmen; gonys much shorter than the middle toe, without claw; tail exceeding the wing by much less than the length of the tarsus. Lower parts more or less distinctly spotted or streaked.

To *Harporhynchus*, as thus restricted, belong only *H. redivivus* (Gamb.), *H. lecontei* (Lawr.) and *H. crissalis* Henry, while to *Methriopterus* may be referred the following: *M. rufus* (Linn.), *M. longirostris* (Lafr.), *M. ocellatus* (Scl.), *M. cinereus* (Xant.), *M. bendirei* (Coues), *M. palmeri* Ridgw., and *M. curvirostris* (Swains.). This arrangement, I am aware, removes *M. palmeri* much further from *H. lecontei* than Mr. Brewster, (*cf.* Bull. Nutt. Orn. Club, vi, Apr. 1881, p. 67) has suggested should be its position; but after a very careful comparison of all the species, I am convinced that the two birds have in fact nothing in common beyond a general superficial resemblance in coloration. In fact, these two species, which exhibit the nearest approach in the two genera, may be as certainly distinguished by the characters given above as may *H. redivivus* and *H. rufus*, although the difference is of course far greater between the two latter.

Harporhynchus rufus (Linn.)

BROWN THRASHER.

Popular synonyms.—French Mocking-bird; Sandy Mocking-bird; Ferruginous Mocking-bird; Fox-colored Mocking-bird; Thrasher.

Turdus rufus Linn, S. N. ed. 10, i, 1758, 169; ed. 12, i, 1766, 293.—Wils. Am. Orn. ii, 1810, 83, pl. 14.—Aud. Orn. Biog. ii, 1834, 102; v, 1839, 441, pl. 116.

Orpheus rufus Sw. & Rich. F. B. A. ii, 1831, 189.—Aud. Synop. 1839, 88; B. Am. iii, 1841, 9, pl. 141.

Harporhynchus rufus Caban. Mus. Hein. i, 1850, 82.—Baird, B. N. Am. 1858, 353; Cat. N. Am. B. 1859, No. 261; Review, 1864, 44.—Coues, Key, 1872, 75; Check List, 1873. No. 10; 2d ed. 1882, No. 17; B. N. W. 1874, 9; Col. Val. 1878, 61.—B. B. & R. Hist. N. Am. B. i, 1874, 37, pl. 3, fig. 1.—Ridgw. Nom. N. Am. B. 1881, No. 13.

Hab. Eastern North America, west to the Rocky Mountains and North to the British Provinces; winters in the Southern U. S.

"Sp. Char. Exposed portion of the bill shorter than the head. Outline of lower mandible straight. Above light cinnamon-red; beneath pale rufous-white with longitudinal streaks of dark brown, excepting on the chin, throat, middle of the belly, and under tail-coverts. These spots anteriorly are reddish brown in their terminal portion. The inner surface of the wing and the inner edges of the primaries are cinnamon; the concealed portion of the quills otherwise is dark brown. The median and greater wing-coverts become blackish brown towards the end, followed by white, producing two conspicuous bands. The tail feathers are all rufous, the external ones obscurely tipped with whitish, the shafts of the same color with the vanes. Length, 11.15; wing, 4.15; tail, 5.20; tarsus, 1.30."* (*Hist. N. Am. B.*)

Though not a very familiar bird—preferring rather hedges and thickets by the wayside—the Brown Thrasher is nevertheless well known from his eminent abilities as a songster, in which respect he has no superior and few rivals in those portions of the country which he inhabits. Besides thickets and hedge-rows, he frequents also open places where there are isolated thorny trees, in which to hide his nest, and where, while his mate is sitting, he mounts to the summit of a tree and, remaining in a fixed position, sometimes for hours together, cheers her, and indeed all listeners, with his sweet and powerful song. The song of this species is conspicuous for its vigor, while it is rendered more attractive by reason of its continuity and pleasing expression. It is said to strongly resemble, particularly in modulation, the melody of the Song Thrush (*Turdus musicus*), perhaps the finest of European songsters. In power it at least equals, and in sweetness excels, the much praised performance of the Mocking-bird, but it lacks the inimitable variety of the latter. Perched aloft on a bare twig, his head thrown proudly up, and tail pendent, he pours forth an untiring succession of pleasant notes,

* Six adult males from the region east of the Mississippi measure as follows: Wing, 4.10-4.25 (average, 4.21); tail, 5.05-5.45 (average, 5.20); culmen, .95-1.00 (average, .99); tarsus, 1.28-1.40 (average, 1.36). Females average somewhat smaller.

extremely varied, but almost constantly uttered in pairs, producing by the latter peculiarity a song unmistakably individual in character.

Genus **MIMUS** Boie.

Mimus Boie, Isis, Oct. 1826, 972. Type, *Turdus polyglottos* Linn.

"Gen. Char. Bill not much more than half the length of the head; gently decurved from the base, notched at tip; commissure curved. Gonys straight, or slightly concave. Rictal bristles quite well developed. Wings rather shorter than the tail. First primary about equal to, or rather more than half, the second; third, fourth, and fifth quills nearly equal, sixth scarcely shorter. Tail considerably graduated; the feathers stiff, rather narrow, especially the outer webs, lateral feathers about three quarters of an inch the shorter, in the type. Tarsi longer than middle toe and claw by rather less than an additional claw; tarsi conspicuously and strongly scutellate; broad plates seven.

"Of this genus there are many species in America, although but one occurs within the limits of the United States.

"The single North American species *M. polyglottus* is ashy brown above, white beneath; wings and tail black, the former much varied with white." (*Hist. N. Am. B.*)

Mimus polyglottos (Linn.)

MOCKING-BIRD.

Popular synonym.—Southern Mocking-bird.

Turdus polyglottos Linn. S. N. ed. 10, i, 1758, 169; ed. 12, i, 1766, 293.

Turdus polyglottus Gmel. S. N. i, 1788, 812.—Wils. Am. Orn. ii, 1810, 14, pl. 10, fig. 1.—Aud. Orn. Biog. i, 1831, 108, pl. 21.—Nutt. Man. i, 1832, 320.

Mimus polyglottus Bonap. Comp. Geog. List, 1837, 17—Baird, B. N. Am. 1858, 344; Cat. N. Am. B. 1859, No. 253; Review, 1864, 48.—Coues, Key, 1872, 74; Check List, 1873, No. 8; 2d ed. 1882, No. 15; B. N. W. 1874, 8; B. Col. Val. 1878, 53.—B. B. & R. Hist. N. Am. B. i, 1874, 49, pl. 3, fig. 4.—Ridgw. Nom. N. Am. B. 1881, No. 11.

Orpheus polyglottus Swains. Zoöl. Jour. iii, 1827, 167.—Aud. Synop. 1839, 87; B. Am. ii, 1841, 187, pl. 138.

Hab. United States, chiefly south of 40°, but occasionally to, or even across, the northern border (west of the Mississippi, breeding as far north as Ft. Fetterman, Wyoming Terr.); Mexico, and Greater Antilles. (Resident throughout its range.)

"Sp. Char. Third and fourth quills longest; second about equal to eighth; the first half or more than half the second. Tail considerably graduated. Above ashy brown, the feathers very obsoletely darker centrally, and towards the light plumbeous downy basal portion (scarcely appreciable, except when the feathers are lifted). The under parts are white, with a faint brownish tinge, except on the chin, and with a shade of ash across the breast. There is a pale superciliary stripe, but the lores are dusky. The wings and tail are dark brown, nearly black, except the lesser wing-coverts, which are like the back; the middle and greater tipped with white, forming two bands; the basal portion of the primaries white; most extended on the inner primaries. The outer tail-feather is white, sometimes a little mottled; the second is mostly white, except on the outer web and towards the base; the third with a white spot on the end; the rest, except the middle, very slightly or not at all tipped with white. The bill and legs are black. Length, 9.56; wing, 4.56; tail, 5.00.

"*Young.* Similar, but distinctly spotted with dusky on the breast, and obsoletely on the back." (*Hist. N. Am. B.*)

So well known are the habits and other characteristics of the Mocking-bird that nearly all that could be written here would be but a repetition of what has been previously published. In Illinois, as in many other States, its distribution is very irregular, its absence from certain localities apparently in every way suited to its requirements being very difficult to account for. Thus, while one or two pairs breed in the outskirts of Mount Carmel nearly every season, it is nowhere in that vicinity a common bird. Thirty miles further north, however, in the neighborhood of Olney, where the country is more open, I have found it almost abundant, on one occasion six males having been seen and heard singing along the roadside during a three miles drive from the town.

Mr. H. K. Coale informs me that he saw a Mocking-bird in Starke county, Indiana, 60 miles southeast of Chicago, January 1st, 1884; that Mr. Green Smith had met with it at Kensington Station, Illinois, and that several have been observed in the parks and door-yards of Chicago. In the extreme southern portion of the State the species is abundant in suitable localities, and is resident through the year.

While without a rival in variety of notes and unequalled in brilliancy of song, the Mocking-bird can scarcely be considered our finest singer. Remarkable as are his powers of imitation, he cannot reproduce the metallic harmony of the smaller Thrushes (*Hylocichlæ*), and perhaps not even the trill of the Canary. To our mind, the Brown Thrasher has a sweeter song, and one equally vigorous; but there is a bold brilliancy to the vocal performance of *Mimus* that is peculiarly his own, and which makes him chief of songsters.

Genus **GALEOSCOPTES** Cabanis.

Galeoscoptes Cabanis, Mus. Hein. I, 1850, 82. Type, *Muscicapa carolinensis* Linn.

"Gen. Char. Bill shorter than the head, rather broad at base. Rictal bristles moderately developed, reaching to the nostrils. Wings a little shorter than the tail, rounded; secondaries well developed; fourth and fifth quills longest; third and sixth a little shorter; first and ninth about equal, and about the length of secondaries; first quill more than half the second, about half the third. Tail graduated; lateral feather about .70 shorter than the middle. Tarsi longer than middle toe and claw by about an additional half-claw; scutellate anteriorly, more or less distinctly in different specimens; scutellæ about seven.

"The conspicuous naked membranous border round the eye of some Thrushes, with the bare space behind it, not appreciable.

"There is little difference in form between the single species of *Galeoscoptes* and *Mimus polyglottus*, beyond the less degree of defini-

tion of the tarsal plates; and but for the difference in coloration (uniform plumbeous, instead of gray above and white beneath), we would hardly be inclined to distinguish the two generically.

"The single species known is lead-colored, with black cap, and chestnut-red under tail-coverts." (*Hist. N. Am. B.*)

Galeoscoptes carolinensis (Linn.)

CATBIRD.

Popular synonym.—English Mocking-bird (Virginia).

Muscicapa carolinensis Linn. S. N. ed. 12, i, 1766, 328.
Orpheus carolinensis Aud. Synop. 1839, 88; B. Am. ii, 1841, 195, pl. 140.
Mimus carolinensis "Gray" Scl. P. Z. S. 1856, [294.—Baird, B. N. Am. 1858, 346; Cat. N. Am. B. 1859, No. 254.—Coues, Key, 1872, 74; Check List, 1873, No. 9; 2d ed. 1881, No. 16. B. N. W. 1874, 8; B. Col. Val. 1878, 56.
Galeoscoptes carolinensis Caban. Mus. Hein. i, 1850, 82.—Baird, Review, 1864, 54.—B. B. & R. Hist. N. Am. B. i, 1874, 52, pl. 3, fig. 5.—Ridgw. Nom. N. Am. B. 1881, No. 12.
Turdus lividis Wils. Am. Orn. ii, 1810, 90, pl. 14, fig. 3.
Turdus felivox Vieill. Ois. Am. Sept. ii, 1807, 10, pl. 67.
Orpheus felivox Sw. & Rich. F. B. A. ii, 1831, 192.

Hab. Eastern North America, north to about lat. 54° in the interior; west to, and including, the Rocky Mountains, and along the northern boundary extending to Oregon and Washington Terr. Winters from the Southern States south to Panama; Cuba; Bermudas.

Sp. Char. *Adult:* Uniform plumbeous-slate, lighter below; pileum dull black, or brownish black, abruptly defined laterally, but anteriorly and posteriorly gradually blending into the dark grayish or slaty of the forehead and nape—the former often with a smoky brown tinge. Tail uniform slate-black, the under surface of the lateral rectrices with the outer web and tip of inner web sometimes grayish, the inner web occasionally indistinctly barred with the same. Crissum chestnut, the feathers slaty beneath the surface. Bill jet black; iris deep brown; legs and feet black, the soles of the toes olive-yellowish. *Young:* Similar to the adult, but blackish of pileum less distinct, and lacking sharp definition laterally, lower parts very faintly mottled, transversely, with darker, and slightly tinged with brownish (as are also the upper parts), the crissum dull light rusty brownish.

Male: Total length, about 8.70–9.00 inches; extent, 11.00–11.50; wing, 3.45–3.75; tail, 3.70–4.25; culmen, .65–.75; tarsus, 1.05–1.15. *Female*, averaging a little smaller.

The Catbird and its habits are too well known to require extended mention in this work. Like a candidate for political honors, he is a rascal and reprobate of the "first water" to some, but the pink of perfection to others. He is, indeed, a bird of varied qualities, which show in different lights, according to the personal predilections or prejudices of the individual who is expressing an opinion respecting his merits or demerits.

One of our most familiar birds, and one which should rank in our affections along with the Bluebird and Robin, is the Catbird. But unfortunately he is the subject of very general prejudice, not merely

on account of his undeniable propensity to steal cherries, but also because many persons dislike the cat-like notes which he utters on certain occasions. But if he is to be condemned to persecution on account of these failings, we must also consider that he is little if any worse than the Robin or the Mocking-bird and when we enlist our thoughts in his favor, and consider his confident familiarity, his trim, graceful form, neat dress, bright, easy manners, and interesting song, we may readily forgive all his short-comings. Though distinguished by his song, which, notwithstanding its frequent interruption by imitations, is eminently original in style, it is, however, his manners which commend him most to our notice. There is scarcely an orchard in the land, from the Atlantic coast to the western base of the Rocky Mountains, and from the Gulf of Mexico to the British Provinces, which is not enlivened by the presence of one or more pairs of Catbirds; and very incomplete an American orchard would seem without them. At all hours of the day his cheerful song may be heard from among the green boughs of an apple-tree; and when the heat of the midday sun tells him that a bath would be refreshing, he comes and splashes in the wash-basin at the back-door in the most perfect civilized style. Then, when we return his familiarity and intrude upon his own household, we cannot but admire the courage with which he remonstrates and defends his home.

The song of the Catbird is one which, though vigorous and pleasing, is not universally admired. It has sufficient vigor, for he is untiring in his efforts to please; it has strength enough, for he is ever ambitious to make his voice conspicuous in the morning chorus; and we occasionally catch snatches of soft and sweet notes, or he even now and then manages to execute some very brilliant passage. But should the latter be the case, he seems himself astonished, though evidently well pleased, for he pauses as if waiting for and expecting applause. In his performance there is too much deliberation, and the general effect is that he is merely practicing, during which he at times gets tired of his own voice, and substitutes other sounds which he has heard. These he imitates with tolerable success, but the sounds which he most affects, as the squeal of a young pig, the squeaking of a hinge, or the squall of a cat, are harsh interruptions to a song which might otherwise be pleasing.

Family **MOTACILLIDÆ**.—The Wagtails and Pipits.

"Char. Bill slender, conical, nearly as high as wide at the base, with slight notch at tip; the culmen slightly concave above the anterior extremity of the nostrils; short bristles at gape, which, however, do not extend forward to nostrils. Loral feathers soft and dense, but with bristly points; nasal groove filled with naked membrane, with the elongated nostrils in lower edge; the frontal feathers coming up to the aperture, but not directed forward nor overhanging it. Wings lengthened and sharp-pointed; the primaries nine (without spurious first), of which the first three to five, considerably longer than the succeeding, form the tip; the exterior secondaries generally much emarginated at the ends; the inner secondaries (so-called tertials) nearly equal to the longest primaries. The tail rather narrow, emarginate. Tarsi lengthened, scutellate anteriorly only, the hind claw usually very long, acute, and but slightly curved (except in *Motacilla*). Inner toe cleft almost to the very base, outer adherent for basal joint only."

"The combination of naked nostrils, notched bill, and nine primaries, with the tarsi scutellate anteriorly only, will at once distinguish the *Anthinæ* of this family from the *Alaudidæ*, which they closely resemble in coloration, habits, and lengthened hind claw. The lengthened, slightly curved hind claw, much pointed wings, emarginated secondaries, —the inner ones nearly as long as the primaries,—distinguish the family from the *Sylvicolidæ*,* with which, also, it has near relationships." (*Hist. N. Am. B.*)

A single genus, *Anthus*, with a rather strongly characterized subgenus, *Neocorys*, occurs within the United States.

Genus **ANTHUS** Bechstein.

Anthus Bechst. Gem. Naturg. Deutschl. 1802. Type, *Alauda spinoletta* Linn.
Neocorys Scl. P. Z. S. 1857, 5. Type, *Alauda spragueii* Aud.

Gen. Char. Bill slender, about half as long as the head, the culmen somewhat depressed or concave in the middle portion, or toward the base, the tip decurved and distinctly notched; rictus not distinctly notched. Tarsi distinctly scutellate, longer than the middle toe; hind toe about as long as the lateral toes, its claw very long and slender (as long as or longer than its digit), but decidedly curved. Wing much longer than the tail, the relative length of the primaries variable (according to the species), but first equal to the fourth, or longer, the fourth very much longer than the fifth; tertials much elongated, the longest never much shorter than the longest primaries, often longer. Tail emarginate or double-rounded, the intermediæ, however, always shorter than the lateral rectrices. Colors never bright, but usually different shades of brown or grayish, more or less distinctly streaked.

In their external appearance, the Titlarks, or Pipits, resemble very closely the true Larks, especially the typical genus, *Alauda*. The species average nearly the same in size, but are of more slender build, have the same brownish, streaked coloration, and also have the tertials and hind claw greatly developed. The analogy extends

* *i. e.* Mniotiltidæ.

still further; for not only are the general habits nearly identical, but the appearance of the eggs, structure and situation of the nest, and general characteristics of song are quite the same. These teleological resemblances, however, are no indication of relationship; on the other hand, the two families are quite far removed from one another in the great assemblage of Passerine birds. It is unnecessary to allude to the differences here, since they have been sufficiently elucidated on page 48.

The two North American species of this genus which may be properly mentioned in the present connection differ as follows:

a^1 First and fourth primaries decidedly or appreciably shorter than second and third; hind toe (with claw) shorter than tarsus; outstretched feet falling considerably short of end of tail. Lateral tail-feathers with inner webs partly dusky. (*Anthus*).

1. **A. pensilvanicus.** Legs and feet always deep brown or dusky. In summer, above nearly uniform grayish brown; beneath deep pinkish buff, the jugulum more or less streaked with dusky (rarely nearly immaculate). In winter, above olive-brown, the pileum and back indistinctly streaked with darker; beneath ochreous-buff, the jugulum broadly streaked with dusky. Wing about 3.15–3.30, tail 2.40–2.60, culmen .42–.50, tarsus .80–.90.

a^2 First primary as long as or longer than second; hind toe (with claw) longer than tarsus; outstretched feet reaching nearly or quite to end of tail. Lateral tail-feathers with inner webs wholly white (for exposed portion). (*Neocorys.*)

2. **A. spragueii.** Bill, legs, and feet pale-colored, the maxilla, only, dusky. *In summer*, above broadly streaked with light buff-grayish and brownish dusky; lower parts dull buffy white, more strongly tinged with buff across jugulum, where narrowly streaked with dusky. *In winter*, beneath much deeper buff, the jugular streaks broader; upper parts with the pale streaks more decidedly buff. *Young*, with upper parts more broadly streaked with blackish, the feathers, especially on back, bordered terminally with white. Wing, about 3.20–3.40; tail, 2.35–2.60; culmen, .45; tarsus, .90.

The *A. spragueii* has usually been placed in a so-called genus *Neocorys*, Sclater; but the variations in the details of external form are so numerous among the many species of the genus *Anthus*, in its comprehensive sense, that the recognition of generic value in the differences which exist between *A. pensilvanicus* and *A. spragueii* would necessitate the adoption of many more genera than most systematists would care to allow. In short, there are so many species which, in their varying details of structure, seem to bridge over so completely these really unimportant differences that, with my present knowledge, I would not feel justified in separating them.

Subgenus **Anthus** Bechstein.

Anthus pensilvanicus (Lath.)

AMERICAN PIPIT.

Popular synonyms.—American Titlark; Pennsylvanian Pipit; Louisiana Pipit.

Alauda pensilvanica Lath. Syn. Suppl. i, 1787, 287.

Anthus pensylvanicus Thienemann, Rhea, ii, 1847, 171.

Alauda ludoviciana Gm. S. N. i, pt. ii, 1788, 793.

Anthus ludovicianus Licht. Verz. Doubl. 1823, 37.—Aud. Synop. 1839, 94; B. Am. iii, 1841, 40, pl. 150.—Nutt. Man. 2d ed. 1840, 517.—Baird, B. N. Am. 1858, 232; Cat. N. Am. B. 1859, No. 165; Review, 1864, 153.—Coues, Key, 1872, 90; Check List, 1873, No. 55; 2d ed. 1882, No. 89; B. N. W. 1874, 40; B. Col. Val. 1878, 193.—B. B. & R. Hist. N. Am. B. i, 1874, 171, pl. 10, fig. 3.—Ridgw. Nom. N. Am. B. 1881, No. 71.

Alauda rufa Wils. Am. Orn. v, 1812, 89, pl. 42, fig. 4.

Anthus spinoletta Nutt. Man. i, 1832, 450.

Anthus aquaticus Sw. & Rich. F. B. A. ii, 1831, 231, pl. 44.—Aud. Orn. Biog. i, (name on pl. 10).

Anthus pipiens Aud. Orn. Biog. i, 1832, 408; v, 1839, 449, pl. 80.

Hab. Whole of North America, but breeding only north of the United States, except on summits of the higher western mountains, where breeding south to Colorado, at least; south, in winter to Guatemala and Bermudas, but apparently not to West Indies.

"Sp. Char. (*Female*, in spring.) Above olive-brown, each feather slightly darker towards the central portion; beneath pale dull buff, or yellowish brown, with a maxillary series of dark brown spots and streaks across the breast and along sides. Ring round the eye, and superciliary stripe, yellowish. Central tail-feathers like the back, others dark blackish brown; the external one white, except at the base within; a white spot at the end of the second. Primaries edged with whitish, other quills with pale brownish. Length, 6.50; wing, 3.45; tail, 2.95."

In Illinois, the Titlark is known only as a spring and fall migrant, or, in the southern portions, an occasional winter resident, appearing irregularly in small flocks, which frequent wet grassy places, where they move upon the ground with a graceful gliding walk, tilting the body and wagging the tail at each step, much in the manner of a *Seiurus*. It is very restless, the flocks seldom remaining long at one place, but soon taking wing, they flit to another spot, or in graceful sweeps pass and repass over a particular place before alighting. During the author's sojourn in western Nevada, in the winter of 1867–68, the Titlark was perhaps the most abundant of the winter residents there. This was particularly the case at the Truckee Meadows, where, in November, they came in immense flocks and spread over the soggy fields. They remained during the moderately cold weather for the greater portion of the winter, occasionally congregating by thousands about the haystacks and corrals. They were equally abundant at Carson City, particularly in the vicinity

of the warm springs, where the high temperature of the water kept the meadow soft and comparatively green, even during the coldest weather. In April, just before their departure for the North, they were observed in their more highly-colored spring plumage.

The Titlark breeds abundantly in the barren regions of the far north, from Labrador to Alaska, and on the bleak summits of the Rocky Mountains as far south at least as Colorado, The nest is built on the ground, and the eggs are so densely speckled with chocolate-brown as to sometimes appear uniformly of this color.

Family MNIOTILTIDÆ.—The American Warblers.

The extensive and varied family of *Mniotiltidæ*, or "Warblers," constitutes a most attractive element of the North American *Ornis*. Next to the *Fringillidæ*, it is more numerously represented than any other, while it is even more characteristic, all the species being purely American, while the *Fringillidæ* are, as a family, cosmopolitan. With a few exceptions they are eminently migratory birds, the great bulk of them passing rapidly across the United States in spring, on the way to their northern breeding grounds, and in fall to their winter residence within the tropics; consequently, they are known to few except the close observer of bird-life, though in season they literally swarm where their insect food is most plentiful—always where the green leaves are, whether in lofty tree-top, vine-embowered coppice, or budding orchard. When the apple trees bloom, the warblers revel among the flowors, vieing in activity and in number with the bees; now probing the recesses of a blossom for an insect which has effected lodgment there, then darting to another, where, poised daintily upon a slender twig, or suspended from it, he explores hastily but carefully for another morsel. Every movement is the personification of nervous activity, as if the time for their journey was short; and, indeed, such appears to be the case, for two or three days at most suffice some species in a single locality; a day spent in gleaning through the woods and orchards of one neighborhood, with occasional brief siestas among the leafy bowers, then the following night in continuous flight toward its northern destination, is probably the history of every individual of the moving throng.

No group of birds more deserves the epithet of "pretty" than the warblers: Tanagers are splendid; Humming-birds are refulgent; other kinds are brilliant, gaudy or magnificent, but warblers alone are *pretty* in the proper and full sense of that term. One of the finest (*Dendroica maculosa*) is decked in richest yellow, deepest black, purest white and softest blue-gray, in elegant pattern and harmonious contrast; in another (*D. blackburniæ*) the intense cadmium-orange throat glows like a burning coal, so strong is the contrast

with the jet-black upper parts; another (*D. virens*) has a coal-black throat, sharply defined against the pure gamboge-yellow cheeks, the back bright olive-green, the lower parts white. One of the most striking in appearance is the Hooded, or Mitred Warbler (*Sylvania mitrata*) the plumage of which is rich yellow beneath, olive green above, the head jet-black except on the sides, where it is rich yellow, the same as the lower parts; the plumage is still further varied by white patches on the inner webs of the tail feathers, which show distinctly when the tail is spread. Without going into further detail, it may be remarked that a peculiar shade of olive-green, which has on this account been well termed "warbler-green," is the usual color of the upper parts in the birds of this family, some species which are otherwise colored in the adult stage having this tint more or less developed in the autumnal plumage of the young.

As natural an arrangement, consistent with convenience of analysis, of the genera of this extensive family as the author is at present able to present, is the following. The groups here recognized are fairly well defined, but are hardly entitled to the rank of sub-families.

a^1—Bill cylindrical (sometimes even somewhat compressed), not abruptly bent at tip and without very distinct notch; rictal bristles weak, sometimes even (apparently) quite obsolete.

b^1. Size small (total length under 6.50 inches); bill slender and nearly cylindrical, the outlines nearly straight.

1. **Mniotilteæ** (*Wood Warblers*). Feet comparatively weak, not reaching, when outstretched, near to the end of the tail. Wing rather lengthened and pointed, considerably longer than the nearly even or slightly emarginated tail. Chiefly arboreal.

2. **Geothlypeæ** (*Ground Warblers*). Feet strong, reaching when outstretched nearly or quite to the end of the tail. Wing rather rounded, usually shorter (never decidedly longer) than the rounded or slightly graduated tail. Terrestrial.

b^2. Size very large (total length more than 7.00 inches); bill stout, compressed, high, the culmen much curved.

3. **Icterieæ** (*Chat-Warblers*). Bill without notch or rictal bristles; wing much rounded, decidedly shorter than the rather lengthened tail.

a^2—Bill decidedly depressed (quite Flycatcher-like), the tip abruptly bent and distinctly notched, rictal bristles strongly developed.

4. **Setophageæ** (*Flycatching Warblers*).

Analysis of Genera.

a. **Mniotilteæ.**

1. Middle toe, with claw, longer than tarsus.
Bill much compressed for terminal half, the lateral outlines decidedly concave; culmen and gonys decidedly convex; commissure moderately concave. Rictal bristles very inconspicuous; notch just perceptible.....**Mniotilta**.

2. Middle toe, with claw, not longer than tarsus.
   Bill without a distinct notch, or lacking it entirely; rictal bristles wanting, or very minute; culmen and gonys nearly straight; bill only very moderately compressed.
   a. Middle toe and claw about equal to tarsus.
      Bill not acute; culmen and gonys decidedly convex; notch just perceptible; bristles apparent ..... **Protonotaria.**
      Bill moderately acute, robust; no notch; culmen straight, its base elevated and slightly arched; bristles not apparent ..... **Helinaia.**
      Bill moderately acute; robust; no notch; culmen convex, its base not elevated; bristles apparent ..... **Helmitheros.**
   b. Middle toe and claw considerably shorter than tarsus.
      Bill very acute, its outlines nearly straight; notch not perceptible; bristles not apparent ..... **Helminthophila.**
      Bill very acute, its outlines nearly straight; notch just perceptible; bristles strong ..... **Compsothlypis.**
      Bill distinctly notched; rictal bristles strong; outlines generally slightly curved ..... **Dendroica.**

b. **Geothlypeæ.**

3. Wings pointed, longer than nearly even tail.
   Above olive-brown; beneath white with dark streaks ..... **Seiurus.**
   Above olive-green; beneath yellow without streaks ..... **Oporornis.**
4. Wings rounded, shorter than the graduated tail.
   Colors as in *Oporornis* ..... **Geothlypis.**

c. **Icterieæ.**

5. Characters as given above; outer toe completely separated from the middle one; upper mandible decidedly deeper than the lower.
   Color above uniform olive-green or olive-gray; beneath rich yellow for anterior half, white posteriorly ..... **Icteria.**

d. **Setophageæ.**

6. Bill decidedly "Tyrannine." Tail fan-shaped, equal to or longer than wing, decidedly rounded. Colors mainly black, orange-red, and white in the male, grayish, yellow, and white in the female ..... **Setophaga**
7. Bill much less depressed, and with less strongly developed rictal bristles. Tail shorter and narrower (shorter than the wing), nearly even. Colors, plain olive-green or gray above, yellow beneath, with more or less of black about the head in the male (sometimes in the female also) ..... **Sylvania.**

It is possible that of the above the *Icterieæ* should properly rank as a subfamily; but some tropical genera (*e. g. Granatellus* of Middle and South America and *Teretistris* of Cuba) appear to connect the only genus, *Icteria*, with the genus *Geothlypis*, through certain tropical species of the latter which have much stouter and more arched bills than the North American species. The connection between *Dendroica* and *Seiurus* is very nearly made in a West Indian species of the former (*D. plumbea* Lawr.) and the Antillean genus *Catharopeza*; the genera *Seiurus* and *Oporornis* differ more in coloration than anything else, while the differences in form between the type of the latter genus and that of *Geothlypis* are reduced to almost *nil* by the

intermediate species, *G. philadelphia* and *G. macgillivrayi*. The *Dendroicæ* pass by almost a gradual transition through *Perissoglossa* very close to *Helminthophila*, while the latter genus stands not far from the allied genera *Helmitheros*, *Helinaia* and *Protonotaria*. No positive distinctions of habits obtain between members of the several groups as a whole; thus, the typical species of *Helminthophila*, those also of *Sylvania* and, the "*Oporornis*" *formosa* inhabit precisely the same localities, keeping near, and nesting on or near, the ground, and are therefore true "Ground Warblers" so far as habits are concerned. Some species of *Dendroica* (*e. g. D. vigorsii* and *D. dominica*) are "creepers," thus showing an analogy, at least, to *Mniotilta*. One species of this same genus (*D. palmarum*), walks gracefully upon the ground, with a delicate mincing step, and undulating wagging of the tail, much like the species of *Seiurus*, but still more like a Titlark (*Anthus*); some of them combine these various characteristics, to a greater or less degree, while others possess none of them to a pronounced extent. It will thus be seen, that while a classification of the family based upon technical characters is difficult, an arrangement by artificial considerations is infinitely more so.

Genus **MNIOTILTA** Vieillot.

Mniotilta Vieillot, Analyse, 1816, 45. Type, *Motacilla varia* Linn.

Gen. Char. Bill rather long, compressed, shorter than the head, with very short rictal bristles and a shallow notch. Wings considerably longer than the tail, which is slightly rounded; first quill shorter than second and (usually) a little shorter than the third also. Tarsi rather short; toes long, middle one equal to the tarsus; hind toe nearly as long, the claw considerably shorter than its digit. Color white, streaked with black. Nest on ground; eggs white, blotched with red.

This genus differs from other *Mniotiltæ* chiefly in the elongation of the toes, especially the hinder one, by means of which the species is enabled to move up and down the trunks of trees, like the true Creepers (*Certhiidæ*). But one species is known. This has, at all stages, the crown black, divided by a broad white medial stripe; the upper parts black, varied by two white wing-bands, the outer edges of the tertials and of upper tail-coverts, a superciliary stripe and more or less of the lower parts, also white. The *adult male* has the throat more or less mixed with black (sometimes almost uniformly of this color), and sides streaked with the same; the *young male* is similar, but with the throat immaculate

white. The *female* is not very different, except that the white markings are more or less soiled with brownish, the black is less intense, and the streaks on the sides indistinct.

Two races have been recognized, only one of which has been detected in Illinois (or indeed in any locality west of the Alleghanies), the typical form being restricted to the Atlantic coast and the West Indies.

Mniotilta varia (Linn.)

BLACK-AND-WHITE WARBLER.

Popular synonyms.—Black-and-white Creeper; Black-and-white Creeping Warbler; Striped Creeper.

a. varia.

Motacilla varia LINN. S. N. ed. 12, i, 1766, 333.
Sylvia varia LATH.—NUTT. Man. i, 1832, 384.
Certhia varia VIEILL. Ois. Am. Sept. ii, 1807, 69.—AUD. Orn. Biog. i, 1832, 452, pl. 90.
Mniotilta varia VIEILL. Analyse, 1816, 45.—AUD. Synop. 1839, 71; B. Am. ii, 1841, 105, pl. 114.—NUTT. Man. 2d ed. i, 1840, 702.—BAIRD, B. N. Am. 1858, 235; Cat. N. Am. B. 1859, No. 167; Review, 1864, 167.—COUES, Key, 1872, 92; Check List, 1873, No. 57; 2d ed. 1882, No. 91; B. N. W. 1874, 45; B. Col. Val. 1878, 204.—B. B. & R., Hist. N. Am. B. i, 1874, 180, pl. 10, fig. 6.—RIDGW. Nom. N. Am. B. 1881, No. 74.
Certhia maculata WILS. Am. Orn. iii, 1811, 22, pl. 19, fig. 3.
Mniotilta varia var. *longirostris* BAIRD, B. N. Am. 1858, p. xxxi, No. 167.

b. borealis.

Mniotilta varia AUCT. (all western references).
Mniotilta borealis NUTT. Man. 2d ed. i, 1840, 705.
Mniotilta varia borealis RIDGW. Nom. N. Am. B. 1881, No. 74*a*.—COUES, 2d Check List, 1882, No. 92.

HAB. Eastern North America, west to eastern base of the Rocky Mountains, north to the fur countries; breeding throughout its range; in winter, both coasts of Mexico (north to Mazatlan) and Central America to Colombia, and throughout Greater Antilles.

SP. CHAR. *Adult male*: Above rather glossy blue-black, relieved by a broad medial crown-stripe of white, two white bands on the wing (formed by tips of middle and greater coverts), and white outer edges of tertials and of upper tail-coverts. Lores and auriculars black, separated from black stripes on sides of crown by a broad white superciliary stripe. Broad malar stripe and most of lower parts white; the sides broadly streaked with black, and the chin and throat more or less mixed with black—almost solid black in high-plumaged specimens. A large white spot on inner webs of two outer tail feathers, near end, and all the rectrices edged externally with bluish gray. Bill wholly deep black in summer, brownish black in winter; iris brown; legs and feet black (at least in summer). Total length about 5.25 inches, extent 8.75, wing (average) 2.80, tail 2.10, culmen .44, tarsus .63, middle toe .52. *Young male first autumn:* Similar to the adult, but whole throat immaculate white. Bill brownish black, the basal portion of the mandible lilaceous-white; feet dull olive, the claws olive-yellowish. *Adult female*: Similar to the male, but colors duller—the black less intense, and the white parts tinged with brownish; throat immaculate white. Size slightly less. *Young, first plumage:* Similar in general appearance to the adult female, but markings, especially the two stripes of the pileum and the streaks beneath, much less

sharply defined; the streaks of the breast indistinct grayish-dusky, suffused with pale fulvous, those of the back more strongly tinged with rusty. The two stripes on the pileum dull grayish-dusky, instead of deep black.

There is a slight average difference in proportions between birds of this species from the Atlantic coast district and those from the country westward of the Alleghanies, but the difference is scarcely sufficient to warrant their separation as races. The average measurements of specimens from the two regions are as follows:

Atlantic coast specimens (true *M. varia*). *Male*: Wing, 2.72–2.88 (average 2.78); tail, 1.92–2.20 (2.07); culmen, .45–.50 (.48); bill from nostril, .32–.40 (.37); tarsus, .60–.68 (.65); middle toe, .50–.58 (.54). *Female*: 2.70; 2.–2.05 (2.02); .45–.48 (.46); .36–.38 (.37); .68–.70 (.69); .50.

Mississippi Valley specimens (*M. varia borealis*). *Male*: Wing, 2.70–2.90 (2.80); tail, 2.–2.24 (2.09); culmen, .40–.48 (.44); bill from nostril, .30–.38 (.32); tarsus, .62–.65 (.63); middle toe, .49–.58 (.52). *Female*: 2.60–2.75 (2.65); 1.92–2. (1.96); .40–.45 (.42); .32; .66; .50–.56 (.53)

The above figures are based upon the careful measurement of 9 adult males and 2 adult females from each region, and, while they show that the difference is not absolutely constant, they show that the eastern bird averages decidedly larger (except in length of wing and tail), the difference being especially noticeable in the greater length of bill and feet.

The longer-billed form winters in Florida and the West Indies, the other in Mexico.

This sprightly and pretty little bird is very common in dry woods, where it may be seen ascending or descending the trunks of trees in the manner of a creeper or nuthatch. Its nest is built upon the ground, imbedded among dry leaves, and as a rule so artfully concealed as to be discovered only by accident.

Genus **PROTONOTARIA** Baird.

Protonotaria Baird, Birds N. Am. 1858, 239. Type, *Motacilla citrea* Bodd.

Gen. Char. Bill longer than the middle toe and claw, distinctly notched, all the outlines nearly straight. Wings much longer than the rather short, rounded tail. Tarsus decidedly longer than the middle toe and claw. Lower tail-coverts reaching nearly to the end of the tail (on account of the shortness of the latter).

This genus is most closely related to the genera *Helinaia* and *Helmitheros*, especially the former, but may be immediately distinguished by the distinctly notched bill, and brilliant colors, there being in the latter respect much resemblance to the *Helminthophilæ*, particularly *H. pinus*. The single known species is one of the largest, and in some respects the finest, of the warblers, and is very peculiar in its habits, frequenting wooded swamps or the willow-grown borders of ponds in the bottom lands, and nesting in holes of stumps or dead trees, like the Titmice.

Protonotaria citrea (Bodd.)

PROTHONOTARY WARBLER.

Popular synonyms.—Golden Swamp Warbler; Willow Warbler.

Motacilla citrea Bodd. Tabl. P. E. 1783, 44 (based on Pl. Enl, 704, fig. 2).

Protonotaria citrea Baird, B. N. Am. 1858, 239; Cat. N. Am. B. 1859, No. 169; Review, 1864, 173.—Coues, Key, 1872, 93; Check List, 1873, No. 59; 2d ed. 1883, No. 95; B. N. W. 1874, 47; B. Col. Val. 1878, 210.—B. B. & R. Hist. N. Am. B. i, 1874, 184, pl. 10, fig. 8. Ridgw. Nom. N. Am. B. 1881, No. 75.

Motacilla protonotarius Gm.—*Sylvia protonotarius* Lath.—Wils. Am. Orn. iii, 1811, 72, pl. 24, fig. 3.—Nutt. Man. i, 1832, 410.—Aud. Orn. Biog. i, 1832, 22; v, 1839, 460, pl. 3.

Helinaia protonotarius Aud. Synop. 1839, 67; B. Am. ii, 1841, 89, pl. 106.

Motacilla auricollis Gmel.—*Sylvia auricollis* Lath.—Nutt. Man. i, 1832, 380.

Sylvicola auricollis Nutt. Man. 2d ed. 1840, 431.

Hab. Eastern United States, chiefly in the Mississippi Valley, where breeding abundantly in willow swamps, north to at least 40° in Illinois and immediately contiguous States. Straggling northward (blown by storms) to Maine and New Brunswick. Winters in Cuba, Yucatan, and southward to Panama.

Sp. Ch. Back olive-green; wings, rump and tail, plain bluish gray, or plumbeous; head and lower parts yellow, the latter white posteriorly; inner webs of tail feathers (except middle pair) white tipped with dusky. *Adult male in spring*: Entire head and neck, and lower parts, except crissum, rich mellow gamboge yellow, varying to cadmium-yellow; top of head sometimes touched or tinted with cadmium-orange, occasionally tinged or washed with olive-green, but often pure yellow. Bill uniform deep black; iris brown; legs and feet dark plumbeous. *Adult male in fall and winter*: Similar, but yellow lighter, or less inclining to cadmium, the top of the head always (?) overlaid by a wash of olive-green. *Adult female*: Similar to the duller colored males, but yellow appreciably less pure, the pileum always olive-greenish, and gray of wings, etc., less bluish.

Total length, about 5.40; wing, 2.90; tail, 2.25.

Wherever there are swamps surrounded by woods and bordered by willow trees, and especially if the growth of the latter be extensive, this beautiful bird is almost sure to occur. In the southern half of the state it is, in such localities, one of the most abundant birds.

In a letter dated July 9, 1884, Mr. H. K. Coale, of Chicago, informs me that on May 11th a few Prothonotary Warblers were found in the woods along the Kankakee River, in Stark county, Indiana, about sixty miles southeast of Chicago. On the 18th, a dozen or more were seen, and on the 25th, having by that time "learned their clear sharp note, repeated four or five times on the same pitch," he could hear them all along the timber; but as he looked for them near the water's edge in the "pucker brush" he did not see many. By carefully following the call of the male he discovered that the birds kept in the tops of the small trees, often flying

across the river in pairs and alighting well up. On June 1st he had no trouble in seeing them and procuring specimens. They were occupied around the dead stumps, about ten feet from the ground. On the 8th of June he gave his attention to hunting for their nests, and found several. Young were found flying about June 15th. Mr. Coale says that "the Prothonotary Warbler is the most abundant summer resident of this locality, excepting perhaps the White-bellied Swallow and Redstart. Probably from forty to sixty pairs of the two former species were breeding within a distance of two miles." He regards the Kankakee as the northern limit of the breeding range of the species. He notes it as having been seen or taken in Cook county, however, near Chicago, in May 1883.

Genus HELINAIA Audubon.

Helinaia Aud. Synopsis, 1839, 66. Type, *Sylvia swainsonii* Aud.

Gen. ch.*—Bill nearly as long as the head, somewhat compressed, especially toward the culmen, which is elevated basally where it extends backward, as a rather prominent ridge well between the frontal apices.

This genus much resembles *Helmitheros* in general appearance, but differs in having a considerably longer and more compressed bill, the ridge of which is compressed, elevated, and appears to extend backwards on the forehead, as well as to be in a straight line with the upper part of the head. The wings are longer, the tail forked, not rounded; the feathers narrower and more pointed; the tarsi shorter. In form it is still nearer *Protonotaria*, but the bill is quite different in shape, while the coloration is widely diverse.

The single species is perhaps the plainest colored of American Warblers, being uniform olive-brown above (the head more rufous) and dingy yellowish-white below.

Mr. Brewster remarks as follows concerning the relationships of this genus:

*"Char. Bill long, robust at base, tapering to a sharp point, smooth or slightly notched at tip; the culmen slightly curved, its ridge compressed, elevated, and extending well back on the forehead, resembling in this, as in some other respects, the bill of the Meadow Lark (*Sturnella*). Wings long, rather rounded, the first quill always shorter than the second and third, which are about equal. Tarsus stout, slightly longer than the middle toe. Feet large, flesh-colored. *Eminently terrestrial.*" Brewster, Auk, Jan. 1885, p. 76.)

"The place which *Helinaia* should occupy in systematic lists is a somewhat puzzling question. Its long wings, large, flesh colored feet, and sluggish terrestrial habits indicate an affinity with *Oporornis;* its acute, compressed bill and short tarsi a perhaps stronger one with *Helmitherus.* In many respects it seems to form a connecting link between these two genera, with *Helmitherus* extending the change towards *Helminthophila.* Baird apparently held some such view in 1858, for he placed *Helmitherus* (in which he included *Helinaia*) between *Icteria* and *Helminthophila,* and *Oporornis* immediately before *Icteria.* Subsequently he separated *Helminthophila* still further from *Oporornis* by the intervention of the additional genera *Perissoglossa, Dendroica* and *Seiurus,* and later authorities have widened the gap still more. Leaving out of consideration the Cærebidæ, a troublesome family which seems to grade insensibly into the Sylvicolidæ through such genera as *Helminthophila* and *Perissoglossa,* our North American Sylvicolidæ might be very naturally arranged as follows: 1, *Mniotilta;* 2, *Dendrœca* (including *Perissoglossa* and *Peucedramus* as sub-genera); 3, *Protonotaria;* 4, *Parula;* 5, *Helminthophila;* 6, *Helmitherus;* 7, *Helinaia;* 8, *Seiurus;* 9, *Oporornis;* 10, *Geothlypis;* 11, *Icteria;* 12, *Myiodioctes;* 13, *Setophaga;* 14, *Cardellina;* 15, *Ergaticus;* 16, *Basileuterus.* The Cærebidæ, however cannot be thus conveniently ignored, and the general subject is far too important and comprehensive to be discussed within the limits of the present paper." (Brewster, Auk, Jan., 1885, p. 79.)

Helinaia swainson Aud.

SWAINSON'S WARBLER.

Popular synonym.—Swainson's Swamp Warbler.

Sylvia swainsonii Aud. Orn. Biog. ii, 1834, 563, pl. 198.
Helinaia swainsonii Aud. Synop. 1839, 66; B. Am. ii, 1841, 83, pl. 104.
Helonœa swainsoni Ridgw. Nom. N. Am. B. 1881. No. 76.
Helmitherus swainsoni Baird, B. N. Am. 1858, 252; Cat. N. Am. B. 1859, No. 179; Review, 1864, 180.—Coues, Key, 1872, 93; Check List, 1873, No. 61; B. Col. Val. 1878, 212.—B. B. & R. Hist. N. Am. B. i, 1874, 190, pl. 10, fig. 9; iii, 1874, 504.
Helmintherus swainsoni Coues, 2d Check List, 1882, No. 97.

Hab. "Austroriparian Province," or Gulf States from South Carolina, Georgia and Florida to eastern Texas (Rice Co.); north, in Mississippi Valley to southern Illinois and southwestern Indiana? Cuba: Jamaica.

"Sp. Char. (Adult ♂, breeding plumage, No. 8974, Coll. W. B., Charleston, South Carolina, May 1, 1884.) Crown and nape reddish brown; remainder of upper parts, including the sides of neck, clear olive, the wings, tail, and upper tail-coverts tinged with reddish

brown; under parts creamy white with a lemon-yellow tinge, most pronounced on the breast and abdomen faintest on the throat and crissum; sides of body brownish olive; sides of breast olivaceous ashy, extending completely across the breast in a broad but rather indistinct band of pale, nebulous spots; throat, abdomen and crissum immaculate; a dusky stripe starting at the lores (which are nearly black) passes backward along the side of the head intersecting the eye and separating a conspicuous, brownish white superciliary stripe from the region below the eye, which is dappled with a reddish brown on a creamy white ground. There is also a short, yellowish, concealed median stripe on the forehead. Iris hazel; legs and feet flesh-color (notes taken from freshly killed specimens).

"*Dimensions.*—L. 5.65; ex., 9.00; wing, 2.82; tail, 2.03; tar, .74; culmen from base, .70; from feathers, .61; from nostril, .42; depth of bill at ant. cor. of nostril, .18; width at same point, .13. Sexes indistinguishable.

"*Juv., first plumage.*—(♂ No. 224, A. T. W., Charleston, June 9, 1884.) Wings and tail essentially as in the adult; abdomen dirty white; rest of plumage, including the crown, nape, back, rump, throat, breast, sides of head, neck and body, and the wing-coverts, nearly uniform dull cinnamon brown, without bands, spots or any other markings whatever, even on the head. Another specimen from the same brood, but apparently older, has the lores distinctly black, the light space on the abdomen nearly obscured by a brownish tipping on many of the feathers, and the general coloring lighter, approaching chocolate-brown in places.

"The above-described plumage is very odd and striking. In general coloring the bird seems to most nearly resemble the young of *Oporornis formosus*.* It differs so widely from the adult *H. swainsoni* that no one would suspect their identity were it not for the bill, which in the smallest specimen before me shows all the essential characteristics of the genus.

"*Juv. fall piumage.*—(♂ No. 354, A. T. W, Charleston, Aug. 25, 1884.) Entire upper parts rich olive strongly tinged with reddish brown, the crown scarcely deeper colored than the back, the wings a trifle redder; loral stripe blackish; superciliary stripe tinged with yellow; under parts strongly yellowish. Otherwise like the adult.

"*Variations.*—Among the adult and fall-plumaged young before me there is much variation in the size and shape of the bill, as well as in general coloration. Some examples have the upper and lower outlines of the bill nearly if not quite straight; in others the culmen is strongly curved, the gonys often with an appreciable angle. Again some specimens have the bill decidedly notched at the tip, although in the majority it is plain. As a rule (but not invariably) young birds seem to have a shorter, slenderer and straighter bill than do the adults.

"The color variations range between two extremes. In one the crown, wings, and tail are bright reddish brown—almost reddish chestnut on the secondaries—in decided contrast with the back, which is deep brownish olive; the underparts strongly yellowish. In the other the wings and tail are concolor with the back, which is of a plain grayish olive; the crown dull reddish brown; the under parts creamy white scarcely, if at all, yellowish. That these variations are not sexual is evident, for the richest-colored bird in the whole series is a female (No. 137, A. T. W., May 10,) and several of the dullest, males; that they are not connected with age is equally certain, for among the young birds still bearing traces of first plumage both types occur. As a rule, however, in autumn they are more apt to be yellow beneath than are breeding birds, but in none of the specimens

*As described by Mr. Ridgway, Bull. N. O. C., Vol. III, No. 2, April, 1868, p. 60. I have no specimens for comparison.

which I have seen is the yellow deeper than in a male taken May 5 (No. 9015, W. B). Adults in autumn are positively indistinguishable from breeding birds. Young in full autumnal dress may be generally, if not invariably, recognized by the darker color of the bill and the much more uniform coloration of the upper parts, the crown in some specimens being almost concolor with the back, wings, and tail, a condition never seen in spring birds.

"In markings the variations are trifling. The nebulous spotting on the breast is indistinct in many birds, and with a few barely appreciable, the ashy being practically confined to the sides, and the remainder of the upper parts immaculate. The yellow of the median stripe on the forehead is usually restricted to the bases of the feathers, but in a few specimens it extends to their tips, forming a conspicuous marking. In others again it is wholly wanting." (BREWSTER, Auk, January, 1885, p. 76–79.)

Further than the account given by Audubon, little was known until quite recently concerning the life-history of this bird. Even now its distribution is very imperfectly made out, but in all probability its range includes the lower South Atlantic States, the Gulf States and the lower Mississippi Valley in general, or from South Carolina and Florida to eastern Texas,* and north in the interior to southern Illinois and Indiana—everywhere in swampy districts only.

GENUS HELMITHERUS RAFINESQUE.

Helmitheros RAFINESQUE, Jour. de Phys. vol. 88, 1819, 417. Type, *Motacilla vermivora* GMEL.—*Helmintherus* VON FRANTZIUS, Jour für Orn. 1869, 293.—*Helminthotherus* SALV. & GODM. Biol. Centr. Am. i. 1880, 112.

GEN. CHAR. Bill large and stout, compressed, nearly or quite as long as the head. Culmen very slightly curved; gonys straight; no notch in the bill; rictal bristles wanting. Tarsi short, but little, if any, longer than the middle toe and claw. Tail considerably shorter than the wings, rather rounded. Wings rather long, the first quill a little shorter than the second and third.

This genus comes near *Helinaia*, but differs in several important respects, which will be found detailed under that genus. The single species is very plainly colored, being uniform olive-green above and buff below, the head deep buff, relieved by two black stripes on the crown and a streak of the same behind the eye.

*See Bull. Nutt. Orn. Club, vol. vi., January, 1881, p. 55. (Navarro county.)

Helmitherus vermivorus (Gmel.)

WORM-EATING WARBLER.

Popular synonym.—Worm-eating Swamp Warbler.

Motacilla vermivora GM. S. N. i. 1788, 951 (based on Edw. pl. 305).

Sylvia vermivora LATH.—WILS. Am. Orn. iii, 1811, 74, pl. 24, fig. 4.—NUTT. Man. i, 1832, 409.—AUD. Orn. Biog. i, 1832, 177; v, 1839, 460, pl. 34.

Helinaia vermivora AUD. Synop. 1839, 66; B. Am. ii, 1841, 86, pl. 105.

Helmitherus vermivorus BAIRD, B. N. Am. 1858, 252; Cat. N. Am. B. 1859, No. 178; Review, 1864, 179.—COUES, Key, 1872, 93; Check List, 1873, No. 60; 2d ed. 1882, No. 96 ("*Helmintherus*"); B. N. W. 1874, 48; B. Col. Val. 1878, 211.—B. B. & R. Hist. N. Am. B. i, 1874, 187, pl. 10, fig. 10.

Helmintherus vermivorus VON FRANTZIUS, Jour. für Orn. 1869, 293.

Helminthotherus vermivorus SALV. & GODM. Biol. Centr. Am. i. 1880, 112.—RIDGW. Nom. N. Am. B. 1881, No. 77.

HAB. Eastern United States, chiefly south of 40°; north regularly to Connecticut Valley, casually to Maine; west to border of Great Plains. Wintering in Florida, Cuba, Jamaica, Yucatan, and Central America, south to Veragua.

SP. CHAR. *Adult (sexes alike):* Head buff, with a broad black stripe on each side of the crown (from nostrils to occiput), and a narrower black stripe behind the eye, along upper edge of the auriculars, continued, more or less distinctly, at the anterior angle of the eye. Upper parts plain olive-green. Lower parts buff, paler on chin, throat, abdomen, and crissum, where sometimes almost white. Upper mandible dark brown, the lower paler; iris dark brown; legs and feet pale brown in dried skins, pale brownish flesh-color in life. Wing, 2.65-2.90; tail, 1.90-2.20; culmen, .60-65; tarsus, about .70. (Female averaging smaller than the male.)

Young, first plumage: Head, neck, and lower parts deep buff, the black stripes of the adult merely indicated by indistinct stripes of dull brown; back, scapulars, rump, and wing-coverts dull light brown, tinged with cinnamon, the greater coverts passing into deep buff terminally. Remiges and rectrices olive-green, as in the adult.

The buff of head-stripes, etc., is deeper in autumnal specimens.

Few of our Warblers are less conspicuous than the present species. Dull of color, retiring in disposition, and unusually shy (according to the writer's experience), with no distinctive notes, he may easily pass unnoticed, or if seen, unidentified. Except for the absence of streaks on his breast (and this deficiency only a full front view would reveal), he would readily pass to the less careful observer for a Golden-crowned Thrush, so common in the same localities. His song so closely resembles that of the Chipping Sparrow that it is sometimes difficult for the most critical listener to distinguish it.

The Worm-eating Warbler usually frequents thick woods, preferably the sides of ravines, where it keeps among the undergrowth, and builds its nest on the ground, imbedded in dry leaves, and hidden by a bunch of sprouts, a few fern-fronds, or other similar objects.

In suitable localities in southern Illinois, the Worm-eating Warbler is a common species; but in the northern portion of the State it appears to be very rare, Mr. Nelson, noting only a single specimen, taken at Waukegan, May 21, 1876.

Genus HELMINTHOPHILA Ridgway.

Helminthophaga Caban. Mus. Hein. i, 1850, 20. Type, *Sylvia ruficapilla* Wils. (Not of Bechst. 1802.)

Helminthophila Ridgw. Bull. Nutt. Orn. Cl. vii, 1882, 53. Same type.

Gen. Char. Bill rather elongated (but shorter than the head), somewhat conical, very acute, the outlines nearly straight, but sometimes slightly decurved at the tip; no trace of notch at the tip, nor of bristles at the base. Wings long and pointed (decidedly longer than the moderately developed tail); the first quill nearly, sometimes quite, the longest. Tail nearly even, or slightly emarginate. Tarsi appreciably longer than the middle toe and claw.

The species are all of small size, being, with the exception of *Compsothlypis*, the smallest of the family. Most of them are brightly colored, at least one of them (*H. chrysoptera*) being one of the prettiest birds of the entire family. Including three somewhat doubtful forms, believed to be hybrids, eleven species are known, of which the following occur east of the Mississippi:

a^1. Wing varied with white or yellow.

b^1. Wing with a large yellow patch covering both rows of coverts.

1. **H. chrysoptera.** Forehead and both rows of wing-coverts yellow; upper parts bluish gray, lower parts white medially, bluish gray laterally. ♂: Lores, auriculars, and whole throat black. ♀: Lores, auriculars, and throat dull gray; yellow of forehead tinged with olive.

2. **H. leucobronchialis.** Similar to *chrysoptera*, but whole throat pure white, even beneath the surface of the feathers; black on side of head limited to a narrow loral and postocular streak; breast often tinged with yellow—sometimes bright yellow; sides usually but slightly or not at all tinged with grayish.

b^2. Wing with two white bands, formed by the tips of middle and greater coverts.

3. **H. lawrencei.** Head and lower parts bright yellow, relieved by broad black stripe coveri ng lores and auriculars and black throat, as in *H. chrysoptera*, the ♀ probably with these black markings dusky olive; upper parts olive-green, the wings and tail bluish gray, the former with two white bands.

4. **H. pinus.** Similar to *H. lawrencei*, but whole throat bright yellow, like other lower parts, and black on side of head reduced to a narrow streak, as in *H. leucobronchialis*. ♀ similar to the ♂, but rather duller, the yellow of forehead less pure, and streak through eye dusky instead of black.

a^1. Wing unvaried.

b^2. Two outer tail feathers with a large white patch near end of inner webs.

5. **H. bachmani.** Above plain olive-green, forehead and lower parts yellow. ♂: Whole throat black; crown gray, bordered anteriorly by a black bar. ♀: Throat dusky olive; crown dull grayish olive, the black bar obsolete.

b^2. Inner webs of tail feathers without white spots.

6. **H. ruficapilla.** Above olive-green, the head grayish, with a whitish orbital ring; lower parts yellow. ♂: Crown with a concealed patch of chestnut. ♀: Similar to the ♂, but colors duller, the chestnut crown-patch less distinct (sometimes obsolete).

7. **H. celata.** Above olive-green, beneath pale grayish yellow; crown with a concealed patch of orange-rufous, this less distinct in the female and quite obsolete in the young.

8. **H. peregrina.** *Adult ♂*: Above olive-green, the head and neck ash-gray, without colored crown-patch, but with a narrow dusky streak through the eye; lower parts white. *Adult ♀*: Similar, but gray of head tinged with greenish, and white of lower parts soiled with yellowish olive, especially on sides. *Young:* Head and neck olive-green, like other upper parts; lower parts strongly tinged with olive-yellowish, the lower tail-coverts, however, always pure white.
9. **H. cincinnatiensis.** Above olive-green, the forehead yellow, and crown blotched with black; rest of head, with whole lower parts, yellow, the side of head marked by a broad loral and suborbital patch of black.

Helminthophila pinus (Linn.)

BLUE-WINGED WARBLER.

Popular synonyms.—Blue-winged Yellow Warbler; Blue-winged Swamp Warbler.

Certhia pinus LINN. S. N. ed. 12, i, 1766, 187.

Helminthophaga pinus BAIRD, B. N. Am. 1858, 254; Cat. N. Am. B. 1859, No. 180; Review, 1864, 174.—COUES, Key, 1872, 94; Check List, 1873, No. 62; 2d ed. 1882, No. 98; B. N. W. 1874, 49; B. Col. Val. 1878, 214.—B. B. & R. Hist. N. Am. B. i, 1874, 195, pl. 11, fig. 1.—RIDGW. Nom. N. Am. 1881, N. 79.

Helminthophila pinus RIDGW. Bull. Nutt. Orn. Cl. vii, 1882, 53.

Sylvia solitaria WILS. Am. Orn. ii, 1810, 109, pl. 15, fig. 4.—NUTT. Man. i, 1832, 410.—AUD. Orn. Biog. i, 1832, 102, pl. 20.

Helinaia solitaria AUD. Synop. 1839, 69; B. Am. ii, 1841, 98, pl. 111.

HAB. Eastern United States, chiefly south of 40° and west of the Alleghanies; north, irregularly to Massachusetts and Michigan, and west to border of the Great Plains. In winter, eastern Mexico and Guatemala.

SP. CHAR. *Adult ♂*: Forehead, fore part of crown, cheeks, and entire lower parts (except crissum), pure gamboge-yellow, most intense on forehead; crissum and lining of wing white, usually more or less tinged with yellow. Occiput, cervix, back, scapulars, and rump, plain olive-green, brightest on the rump, where more tinged with yellow; wings and tail bluish gray, the former crossed by two white bands, formed by tips of middle and greater coverts; two outer tail feathers with most of the inner web white, the third with about the terminal half white. Lores and a narrow postocular streak, deep black. Bill wholly deep black; iris brown; legs and feet dull plumbeous, more or less tinged with yellowish, especially on soles of toes. *In autumn*, similar, but yellow of forehead more or less obscured by olive-green; maxilla dark plumbeous or brownish black, its edge, with mandible, dull flesh color, or purplish brown, the latter with a blackish stripe along each side. *Adult ♀*: Similar to the ♂, but colors appreciably duller.

Total length, 4.65-5.; extent, 7.-7.50; wing, about 2.40-2.50.; tail, 2.-2.10; culmen, .50; tarsus, .70.

In half-cleared fields which have grown up to sprouts, and in rich open woods in the bottom-lands, where the switch-cane forms a considerable proportion of the undergrowth, the Blue-winged Yellow Warbler is one of the characteristic birds. The male is a persistent singer during the breeding season, and thus betrays his presence to the collector, who finds this of all species one of the easiest to procure. His song is very rude, however, resembling more that of the Yellow-winged Sparrow than any other bird whose song I have heard. The nest is built on the ground, among upright stalks, resting on a thick foundation of dry leaves.

Helminthophila chrysoptera (Linn.)

GOLDEN-WINGED WARBLER.

Popular synonyms.—Blue Golden-winged Warbler; Golden-winged Swamp Warbler.

Motacilla chrysoptera Linn. S. N. ed. 12, i, 1766, 333.

Sylvia chrysoptera Lath.—Wils. Am. Orn. ii, 1810, 113, pl. 15, fig. 5.—Nutt. Man. i, 1832, 411.—Aud. Orn. Biog. v. 1839, 154, pl. 414.

Helinaia chrysoptera Aud. Synop. 1839, 67; B. Am. ii, 1841, 91, pl. 107.

Helminthophaga chrysoptera Cab. Mus. Hein. i, 1850, 20.—Baird, B. N. Am. 1858, 255; Cat. N. Am. B. 1859, No. 181; Review, 1864, 175.—Coues, Key, 1872, 94; Check List, 1873, No. 63; 2d ed. 1882, No. 102; B. N. W. 1874, 49; B. Col. Val. 1878, 216.—B. B. & R. Hist. N. Am. B. i, 1874, 192, pl. 11, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 81.

Helminthophila chrysoptera Ridgw. Bull. Nutt. Orn. Cl. vii, 1882, 53.

Hab. Eastern United States (chiefly north of 40° in summer) and Canada. Winters in Cuba, Central America and extreme northern portion of South America (Colombia).

Sp. Char. *Adult* ♂: Forehead and fore part of crown rich gamboge-yellow; occiput, cervix, and other upper parts uniform bluish gray, relieved by a large patch of light gamboge-yellow covering both rows of wing-coverts; secondaries (including tertials) sometimes edged with olive-green; inner webs of three outer tail feathers marked with a large white patch, that on the exterior feather occupying the greater portion of the terminal two thirds. Lores, orbits, and auriculars deep black; below this, a pure white malar stripe, and above the auriculars a more or less distinct white streak, extending anteriorly to above the eye; chin, throat, and jugulum solid black, with a rounded posterior outline. Remaining lower parts pure white medially, bluish gray along sides. Bill deep black; iris brown. *In autumn*, similar, but black feathers of throat very narrowly margined with white, the yellow of forehead and blue-gray of back tinged with olive-green. *Adult* ♀: Similar to the ♂, but black of throat and auriculars replaced by dusky grayish, the yellow of forehead obscured by olive-green, and back usually tinged with the same.

Total length about 5 inches; wing 2.45–2.65; tail 1.90–2.25; culmen about .50; tarsus .70.

The southern limits of this species during the breeding season are not known with certainty. The writer is certain of having seen one or two individuals during a visit to Fox Prairie, in Richland county, in June, 1871, but whether they were breeding there he has no evidence further than the circumstance that all other species of the neighborhood were then nesting, while all which were unquestionably migrating had passed north at least two weeks before.* It has been found breeding abundantly in Stark county, Indiana, by Mr. H. K. Coale, who sends me the following interesting communication concerning his discovery:

"Each season reveals new and interesting facts in the study of the birds. On May 11th, 1884, in a woods on the Kankakee river, in Starke county, Indiana, I found the Golden-winged Warbler quite common. Five were shot and three others seen—all males, which were singing. Some were flushed from the ground and flew up to the nearest small tree, where they sat motionless next the trunk.

* Since the above was written, found breeding by the writer (in June, 1885) along the southern edge of Calhoun Prairie, in Richland county.

The locality was a moist situation, overgrown with young trees and bushes. Their short lisping note, repeated four times, was easily distinguished."

The Golden-winged Warbler is a common species during the spring migration in Wabash county, Illinois, and in adjacent counties of Indiana, and it is hardly, if at all, less rare in fall.

Helminthophila ruficapilla (Wils.)

NASHVILLE WARBLER.

Sylvia ruficapilla WILS. Am. Orn. iii, 1811, 120, pl. 27, fig. 3.—AUD. Orn. Biog. i, 1832, 450, pl. 89.

Helminthophaga ruficapilla BAIRD, B. N. Am. 1858, 256; Cat. N. Am. B. 1859, No. 183; Review, 1864, 175.—COUES, Key, 1872, 94; Check List, 1873, No. 67; 2d ed. 1882, No. 106; B. N. W. 1874, 50; B. Col. Val. 1878, 224.—B. B. & R. Hist. N. Am. B. i, 1874, 196, pl. 11, fig. 7.—RIDGW. Nom. N. Am. B. 1881, No. 85.

Helminthophila ruficapilla RIDGW. Bull Nutt. Orn. Club, vii. 1882, 54.

Sylvia rubricapilla WILS. Am. Orn. vi, 1812, 15 (index).—NUTT. Man. i, 1882, 412.

Helinaia rubricapilla AUD. Synop. 1839, 70; B. Am. ii. 1841, 103, pl. 113.

HAB. Nearly the whole of North America, but rather irregularly distributed in the West; breeding on higher mountain ranges within the United States (south in the Sierra Nevada to at least 38°)*, but chiefly northward (south to Massachusetts). Winters chiefly in Mexico. Casual in Greenland.

"SP. CHAR. Head and neck above and on sides ash-gray, the crown with a patch of concealed dark brownish-orange hidden by ashy tips to the feathers. Upper parts olive-green, brightest on the rump. Under parts generally, with the edge of the wing, deep yellow; the anal region paler; the sides tinged with olive. A broad yellowish white ring round the eye; the lores yellowish; no superciliary stripe. The inner edges of the tail-feathers margined with dull white. *Female* similar, but duller; the under parts paler and with more white; but little trace of the red of the crown. Length, 4.65; wing, 2.42; tail, 2.05." (*Hist. N. Am. B.*)

"*First plumage:* Female. Remiges, rectrices, etc., as in adult. Two conspicuous wing-bands of bright buff. Pileum and nape light ashy, tinged with fulvous. Back ashy, just touched with green; rump bright olive-green. Supra-orbital line, ring around eye, and the throat, bright buff. Lores, maxillary line, and auriculars pale ashy. Breast and crissum gamboge-yellow, each feather tipped with whitish, producing a somewhat hoary appearance. Abdomen pale yellow; sides dull cinnamon, with a shade of ashy. From a specimen in my collection taken at Upton, Me., August 14, 1873. A full series of specimens illustrates well the progressive stages. The fall plumage in very quickly acquired by young of this species." (BREWSTER, Bull Nutt. Orn. Club, Apr. 1878, p. 57.)

The Nashville Warbler is a rather common bird during the migrating seasons, and breeds in the extreme northern counties of the State. In its general habits this species is much like the other members of the genus, living among the undergrowth in open woods or among bushes in cleared places, and building its nest upon the ground. The song is said to resemble that of the Chestnut-sided

* The western bird is now recognized as a distinct race, *H. ruficapilla gutturalis* Ridgw. (*Hist. N. Am. B.* i, p. 191.)

and Summer Yellow Warblers (*Dendroica pennsylvanica* and *D. æstiva*), and is therefore very different from that of its Blue-winged Yellow and Golden-winged congeners.

Helminthophila celata (Say)

ORANGE-CROWNED WARBLER.

Sylvia celata SAY, Long's Exp. i, 1823, 169.—NUTT. Man. i, 1832, 413.—AUD. Orn. Biog. ii, 1831, 449.

Vermivora celata NUTT. Man. 2d ed. 1840, 473.

Helinaia celata (part) AUD. Synop. 1839, 69; B. Am. ii, 1841, 100.

Helminthophaga celata (part) BAIRD, B. N. Am. 1858, 257; Cat. N. Am. B. 1859, No. 184; Review, 1864, 176.—COUES, Key, 1872, 95; Check List, 1873, No. 68; 2d ed. 1882, No. 107; B. N. W. 1874, 52; B. Col. Val. 1878, 226.—B. B. & R. Hist. N. Am. B. i, 1874, 202, pl. 11, fig. 5.—RIDGW. Nom. N. Am. B. 1881, No. 86.

Helminthophila celata RIDGW. Bull. Nutt. Orn. Club, vii, 1882, 54.

HAB. Interior of North America, breeding in the Rocky Mountain region and northward to the Yukon region of Alaska; in winter migrating through the Mississippi Valley and westward to the Great Basin; very rare, during migrations, in Atlantic States. Wintering along southern border of United States and in Mexico. (Replaced along Pacific coast, from the Alaskan peninsula southward, by a brighter-colored race, *H. celata lutescens*, and in the South Atlantic States by the dark-colored *H. celata obscura;* the latter possibly breeding in the higher Alleghanies.

"SP. CHAR. Above grayish olive-green, rather brighter on the rump. Beneath entirely greenish yellowish-white, except a little whitish about the anus; the sides tinged with grayish olivaceous. A concealed patch of pale orange-rufous on the crown, hidden by the grayish tips to the feathers. Eyelids and an obscure superciliary line yellowish white, a dusky obscure streak through the eye. Inner webs of tail feathers broadly edged with white. *Female* with little or none of the orange on the crown, and the white edgings to inner webs of tail feathers. *Young* lacking the orange entirely, and with two fulvous-whitish bands on the wing. Length, 4.70: wing, 2.25; tail, 2.00."*

During the seasons of migration, this species is occasionally common, but some years appears to be very rare if not wanting altogether. It possesses no special characteristic of habits or song, in which respects it resembles the other members of the genus. The writer found it a very abundant species during autumn in the mountains of Nevada and Utah, and a rather common bird in the higher woods of the Wahsatch Mountains, where it was breeding. Its summer home extends far northward, even to the shores of the Arctic seas, and it breeds abundantly throughout the Yukon Valley in Alaska, quite to the shores of Norton Sound, and thence eastward to the McKenzie River district, from which region numerous nests have been received at the National Museum.

* Average of five adult males: wing, 2.50; tail, 2.04; culmen, .41; tarsus, .42.
Average of two adult females: wing, 2.34; tail, 1.98; culmen, .40; tarsus, .64.

Helminthophila peregrina (Wils.)

TENNESSEE WARBLER.

Sylvia peregrina WILS. Am. Orn. iii, 1811, 83, pl. 25, fig. 2.—NUTT. Man. i, 1832, 412.—AUD. Orn. Biog. ii, 1834, 307, pl. 154.

Sylvicola (Vermivora) peregrina SW. & RICH. Faun. Bor. Am. ii, 1831, 221, pl. 42.

Vermivora peregrina NUTT. Man. 2d ed. i, 1840, 469.

Helinaia peregrina AUD. Synop. 1839, 68; B. Am. ii, 1841, 96, pl. 110.

Helminthophaga peregrina CAB.—BAIRD, B. N. Am. 1858, 258; Cat. N. Am. A. 1859, No. 185; Review, 1865, 178.—COUES, Key, 1872, 95; Check List, 1873, No. 69; 2d ed. 1882, No. 109; B. N. W. 1874, 53; B. Col. Val. 1878, 230.—B. B. & R. Hist. N. Am. B. i. 1874, 205, pl. 11, figs. 10, 11.—RIDGW. Nom. N. Am. B. 1881, No. 87.

Helminthophila peregrina RIDGW. Bull. Nutt. Orn. Cl. vii, 1882, 54.

HAB. Eastern North America, west to eastern base of Rocky Mountains (El Paso Co., Colorado, Sept. 1, 1873; C. E. Aiken); breeding from northern border of United States to the Arctic regions; winters in Cuba and Middle America and south to Colombia.

"SP. CHAR. Top and sides of the head and neck ash-gray; rest of upper parts olive-green, brightest on the rump. Beneath dull white, faintly tinged in places, especially on the sides, with yellowish-olive. Eyelids and a stripe over the eye whitish; a dusky line from the eye to the bill. Outer tail-feather with a white spot along the inner edge near the tip. *Female* with the ash of the head less conspicuous; the under parts more tinged with olive-yellow. Length, 4.50; wing, 2.75; tail, 1.85.

"Autumnal specimens and young birds are sometimes so strongly tinged with greenish yellow as to be scarcely distinguishable from *H. celata*. The wing is, however, always longer, and the obscure whitish patch on the inner edge of the exterior tail-feather, near its tip, is almost always appreciable. In *celata* this edge is very narrowly and uniformly margined with whitish.

"A young bird of the year, from Fort Simpson (27,228), has two distinct greenish white bands on the wings, and the forehead and cheeks greenish yellow. A corresponding age of *H. celata* has the wing-bands more reddish brown, the wings shorter, and no white patch on the outer tail-feather." (*Hist. N. Am. B.*)

Autumnal specimens usually have the primaries narrowly but distinctly tipped with white, and occasionally show traces of white tips to the greater wing-coverts.

Like the Orange-crowned Warbler, the Tennessee Warbler is a bird of extreme northern distribution during the breeding season; but, while the former is chiefly western during its migrations the latter is exclusively eastern, the base of the Rocky Mountains being the western limit of its range. It is very abundant in Illinois during its migrations, both in spring and fall; indeed, it seems to be far more numerous west of the Alleghanies than eastward of that range, in which respect it is like the Philadelphia Vireo and several other migratory birds, which can scarcely be considered as more than stragglers in the Atlantic States. Like the Orange-crowned

Warbler, this species breeds abundantly in the extreme north, being particularly numerous in the McKenzie River district; but it is apparently wanting to the Alaskan fauna. The southern portion of its breeding range includes the northern shores of the Great Lakes and a considerable portion of New England, including parts of Massachusetts. Its nest, like that of other species of its genus, is built on the ground. The song is said to resemble that of the Nashville Warbler, except that it is shriller.

Genus COMPSOTHLYPIS Cabanis.

Parula Bonap. Geog. & Comp. List, 1838, 20. Type, *Parus americanus* Linn. (Not *Parulus* Spix, 1824.)

Compsothlypis Cabanis, Mus. Hein. i, 1850, 20. (Same type.)

"Gen. Char. In the species of this genus the bill is conical and acute; the culmen very gently curved from the base; the commissure slightly concave. The notch when visible is further from the tip than in *Dendroica*, but usually is either obsolete or entirely wanting. Bristles weak. The tarsi are longer than the middle toe. The tail is nearly even, and considerably shorter than the wing. Color, blue above, with a triangular patch of green on the back; anterior lower parts yellow." (*Hist. N. Am. B.*)

Compsothlypis americana (Linn.)

PARULA WARBLER.

Popular synonyms.—Particolored Warbler; Blue Yellow-backed Warbler.

Parus americanus Linn. S. N. ed. 10, i, 1758, 190.

Sylvia americana Aud. Orn. Biog. i, 1832, 78, pl. 15.

Sylvicola americana Aud. Synop, 1839, 59; B. Am. ii, 1841, 57, pl. 91.

Parula americana Bonap. Comp. List, 1838, 20.—Baird, B. N. Am. 1858, 238; Cat. N. Am. B. 1859, No. 168; Review, 1865, 169.—Coues, Key, 1872, 92; Check List, 1873, No. 58: 2d ed. 1882, No. 93; B. N. W. 1874, 46; B. Col. Val. 1878, 208.—B. B. & R. Hist. N. Am. B. i, 1874, 208, pl. 10, fig. 7.—Ridgw. Nom. N. Am. B. 1881, No. 88.

Compsothlypis americana Cab. Mus. Hein. i, 1851, 20.

Sylvia pusilla Wils. Am. Orn. iv, 1811, 17, pl. 28, fig. 3.

Hab. Eastern United States and British Provinces, breeding throughout, or from Gulf coast northward; in winter, most of the West Indies, Mexico, and Guatemala; also in Florida (and along Gulf coast). West to eastern base of Rocky Mountains (El Paso Co., Colorado, May; C. E. Aiken).

Sp. Char. Two bands on the wing-coverts, and spots on inner webs of two or three outer tail-feathers, just before the end, white; breast yellow; back greenish; abdomen and crissum white. *Adult ♂*: Above grayish blue, with a triangular patch of olive-green on the back; throat and breast yellow, with more or less of dusky, and sometimes also of orange-rufous, across the jugulum. *Adult ♀*: Similar, but colors duller, the blue above obscured with a greenish wash and the yellow beneath paler and more soiled.

First plumage: male. Remiges, rectrices, etc., as in the adult. Pileum, cervix, rump and upper tail-coverts dull gray tinged with olive anteriorly and with blue posteriorly

the back with more or less of an indistinct patch of olive-green: throat and eyelids grayish white, abdomen, anal region, and crissum pure white; jugulum and sides of breast pale ash-gray. From two specimens obtained at Mt. Carmel, Ill., July 17, 1871. Both of these show a large patch of bright gamboge-yellow on the breast, these feathers denoting the commencement of the adult plumage. One of them also has the chin and an indistinct supraloral line tinged with yellow.

"Autumnal males are browner on the chin, yellower on the throat and jugulum. Head tinged with greenish; secondaries edged with greenish yellow. Autumnal females are light greenish olive above, dirty white beneath.

"In very brightly colored spring males, there is frequently (as in 58,335, Philadelphia) a well-defined, broad blackish band across the jugulum, anterior to an equally distinct and rather broader one across the breast, of a brown tint, spotted with black, while the sides are much spotted with chestnut-brown; the blue above is very pure, and the green patch on the back very sharply defined." (*Hist. N. Am. B.*)

This pretty little warbler is abundant during the migrations, and is also not uncommon in swampy forests during summer, when it inhabits chiefly those woods where the long gray lichens (*Usnea*) are abundant on the trunks and branches of the trees. In these long beard-like tufts it constructs its nest, which is so artfully concealed that only the actions of the owners can reveal its location.

Genus **DENDROICA** Gray.

Dendroica Gray, List of Gen. and Subg. B. 2d ed. Appendix, 1842, 8. Type, *Motacilla coronata* Linn.

The essential characters of this genus, as here enlarged, have been given on page 115. Therefore, we will in this place give the differential characters of the two so-called subgenera, fuller diagnoses of which will be found under their separate headings:

Dendroica.—Bill not acute, the gonys convex, the notch distinct. Tongue not lacerate or fringed at tip.

Perissoglossa.—Bill very acute, the gonys slightly concave near tip, the notch obsolete or very indistinct. Tongue forked and deeply lacerate at tip.

Subgenus **Perissoglossa** Baird.

Perissoglossa Baird, Rev. Am. Birds, 1864, 181. Type, *Motacilla tigrina* Gm.

"Gen. Char. Form of *Dendroica*, but bill slender, acute, with very indistinct notch; the commissure gently arched or curved from the base; the gonys also straight, or even

slightly concave. Tongue lengthened, narrow, deeply bifid (for one third), and deeply lacerated or fringed externally at the end; the edge along the median portion folded over on the upper surface, but not adherent." (*Hist. N. Am. B.*)

The curvature of the bill in *Perissoglossa tigrina* is quite peculiar among the *Mniotiltidæ* with notched bills, with the single exception of *Helminthophila bachmani*.

It seems likely that the *Helinaia carbonata* of Audubon belongs here, as it appears very closely allied to the type of this subgenus. The two species differ, however, as follows:—

COMMON CHARACTERS. *Male.* Top of head black. Above olive, becoming yellowish on rump. Head, neck, and lower parts bright yellow, becoming whitish posteriorly. Dorsal feathers with black centres; breast and sides streaked with black. A black streak through the eye.

P. tigrina. Large white patches on inner webs of tail feathers.

Sides of head and middle of throat tinged with chestnut. One large white patch on wing, covering both rows of coverts. Outer web of lateral tail-feather blackish.

P. carbonata. No white patches on tail feathers.

No chestnut about head. Two bands on the wing, the anterior one white, the posterior yellow. Outer web of lateral tail-feather whitish.

Dendroica tigrina (Gmel.)

CAPE MAY WARBLER.

Motacilla tigrina GMEL. S. N. i, 1788, 985 (based on EDWARDS, pl. 257).

Dendroica tigrina BAIRD, B. N. Am. 1858, 286; Cat. N. Am. B. 1859, No. 206.—COUES, Key, 1872, 102; Check List, 1873 No. 85; 2d ed. 1882, No. 126; B. Col. Val. 1878, 245.

Perissoglossa tigrina BAIRD, Review, 1865, 181.—B. B. & R. Hist. N. Am. B. i, 1874, 212, pl. 12, figs. 1, 2—RIDGW. Nom. N. Am. B. 1881, No. 90.

Sylvia maritima WILS. Am. Orn. vi, 1812, 99, pl. 54, fig. 3.—AUD. Orn. Biog. v, 1839, 156, pl. 414.—NUTT. Man. i, 1832, 371.

Sylvicola maritima JARD.—AUD. Synop. 1839, 56; B. Am. ii, 1841, 44, pl. 85.—NUTT. Man. 2d ed. i, 1840, 424.

HAB. Eastern North America, north to Hudson's Bay and Lake Winnipeg; breeding chiefly north of the United States and wintering in the West Indies, where resident in Jamaica.

"SP. CHAR. Bill very acute, conical and decidedly curved. Bill and feet black. Upper part of head dull black, some of the feathers faintly margined with light yellowish brown. Collar scarcely meeting behind, rump and under parts generally rich yellow. Throat, forepart of breast, and sides streaked with black. Abdomen and lower tail-coverts pale yellow, brighter about the vent. Ear-coverts light reddish-chestnut. Back part of a yellow line from nostrils over the eye of this same color; chin and throat tinged also with it. A black line from commissure through the eye, and running into the chestnut of the ear-coverts. Back, shoulders, edges of the wing and tail, yellowish olive; the former spotted with dusky. One row of small coverts, and outer bases of the secondary coverts, form a large patch of white, tinged with pale yellow. Tertials rather broadly edged with brownish white. Quills and tail dark brown, the three outer feathers of the latter largely marked with white on the inner web; edge of the outer web of the outer feathers white, more perceptible towards the base. Length, 5.25; wing, 2.84; tail, 2.15.

"*Female.* Above olivaceous-ash, most yellowish on rump; no black nor chestnut on head. Wing-coverts inconspicuously edged with whitish. Tail spots very inconspicuous Beneath dull white tinged with yellowish on the breast, and streaked as in the male, but with dusky grayish instead of black." (*Hist. N. Am. B.*)

"*First plumage: female.* Remiges, rectrices, and primary coverts as in adult. Pileum, nape, rump, and upper tail-coverts dark slaty-brown, the back with an indistinct patch of olive-green. Eyelids, throat, jugulum, and sides of breast dark slate; abdomen, anal region, and crissum soiled white, tinged with dull yellow. From a specimen in my collection shot at Upton, Me., August 21, 1874. This bird exhibits a few irregular patches and isolated feathers of dull yellow on the breast and throat, forerunners of the fall plumage." (BREWSTER, Bull. Nutt. Orn. Club Apr. 1878, p. 60.)

"The chestnut about the head in adult males varies in amount with the individual; sometimes (as in 20,633, May, Moose Factory, Hudson's Bay Territory) there is an oblong spot of chestnut in the middle of the crown, but generally this is absent. Very frequently the chestnut tinges the throat. All variations in these respects appear, however, to be individual, and not dependent at all on locality. West Indian specimens appear to be absolutely identical with those from North America.

"Autumnal specimens are browner, the chestnut markings much obscured." (*Hist. N. Am. B.*)

This was until within comparatively a few years a rare bird, whose habits were by no means well known. It passes through Illinois during its migrations, but does not, so far as known, remain to breed, although in the mountainous portions of Hayti and Jamaica and perhaps others of the Greater Antilles, it is a permanent resident; thus having a very peculiar distribution, like the Yellow rumped Warbler (*Dendroica coronata*) and possibly other members of the family.

With the exception of two, which were taken in an orchard (when the apple-trees were in bloom), all the specimens of this species secured by the writer were shot from tall tree-tops, the height being so great that it was impossible to identify the species. It therefore seems likely that most examples evade the collector by keeping in the tree-tops at such an elevation that they cannot be distinguished from other Warblers.

Mr. Nelson (page 99 of his catalogue) says of this species in northeastern Illinois:

"Very common migrant. May 7th to 25th, and September 5th to 20th. In spring, found almost exclusively in the tops of the trees; in autumn found in large numbers along roadsides, borders of woods and fields in company with *Dendrœca palmarum*, from which it is, with difficulty, distinguished at gunshot, so closely alike are their habits and movements at this season."

Subgenus **Dendroica** Gray.

Dendroica Gray, Genera Birds, Appendix, 1842, 8. Type, *Motacilla coronata* Linn.

"Gen. Char. Bill conical, attenuated, depressed at the base, where it is however scarcely broader than high, compressed from the middle. Culmen straight for the basal half, then rather rapidly curving, the lower edge of upper mandible also concave. Gonys slightly convex and ascending. A distinct notch near the end of the bill. Bristles, though short, generally quite distinct at the base of the bill. Tarsi long, decidedly longer than the middle toe, which is longer than the hinder one; the claws rather small and much curved; the hind claw nearly as long as its digit. The wings long and pointed the second quill usually a very little longer than the first. The tail slightly rounded and emarginate."

"*Colors.* Tail always with a white or yellow spot; its ground color never clear olive-green; in *D. æstiva* edged internally with yellow.

"*Eggs* usually with a white or a bluish white ground, marked with purplish brown and obscure lilac; in some, mingled with varying shades of sienna-brown. Nest, so far as known, in bushes and trees, except *D. palmarum*, which is on the ground.

"The genus *Dendroica* is one of the most extensive as to species of any in North America, and scarcely admits of any subdivision. There is a little variation in the bill, wings, etc., the chief peculiarities being in *D. castanea* and *pennsylvanica*, in which the bill is broader, and more depressed, with longer bristles; in *D. striata*, where the bill is narrow with scarcely any bristles; and in *D. palmarum* and *kirtlandi*, where the wings are very short, scarcely longer than the tail. *D. palmarum* has the tarsus unusually long. The colors in all are strongly marked, and the species are among the most beautiful of all belonging to our fauna, and are the most conspicuous for their numbers and in their migrations." (*Hist. N. Am. B.*)

The difference in manners between certain members of this genus is remarkable; thus, the *D. palmarum* is very terrestrial in its habits, walking upon the ground with the ease and grace of a Titlark (*Anthus*), and, like these birds, it has a wagging motion of the tail. On the other hand, the *D. dominica* and *D. vigorsii* are "Creepers" almost to the same extent as is the *Mniotilta varia;* creeping not only along the branches of trees, but the cornices and lattices of buildings, with the facility of a Nuthatch (*Sitta*). Both these species, however, may often be seen hopping among the foliage of the trees, now and then snapping an insect on the wing, in the manner of others of the family.

Synopsis of Species.

A. Inner webs of lateral tail-feathers with a patch or distinct edging of yellow.

1. **D. æstiva.** ♂: Gamboge-yellow, more olive-green above, the breast and sides streaked with chestnut-red. ♀: Duller, lacking distinct red streaks below. *Young:* Dull olive-green above, plain pale yellow, or greenish buffy white, below.

B. Inner webs of lateral tail-feathers with patch or distinct edging of white.

a. Wing without light markings, except a white spot at base of primaries (sometimes obsolete in ♀).

2. **D. cærulescens.** ♂: Above plain dark dull blue; sides of head and neck, throat, and sides, black; belly white. ♀: Above dull grayish green, below dull pale greenish buff.

b. Wing with one or two distinct bands across coverts.

3. **D. virens.** ♂: Above bright olive-green; wing with two white bands; sides of head gamboge-yellow; chin, throat, jugulum and sides of breast, deep black; belly white. ♀: Similar, but black of throat, etc., broken by admixture of yellow and whitish. *Young in fall and winter:* Throat, etc., mostly pale yellowish.

4. **D. striata.** Crissum pure white at all stages and seasons. ♂: Pileum uniform deep black; upper parts grayish, streaked with black, the wings with two white bands; lower parts pure white, the sides of the throat with a series of blended black streaks, uniting on chin. ♀: Above dull olive-green, everywhere streaked with black; beneath whitish, more or less tinged anteriorly with greenish buff, the sides (and sometimes sides of throat) streaked with dusky. *Young in fall and winter:* Above olive-green, more or less streaked, especially on back, with dusky; beneath pale olive-yellowish, the *crissum, however, always pure white.*

5. **D. castanea.** Crissum always pale creamy buff. ♂: Crown, throat and entire sides chestnut, darkest on the first; above grayish, streaked with black, the wing with two white bands; sides of neck and whole belly pale buff, or buffy white. ♀: Somewhat similar, but chestnut wanting, or merely indicated, the crown streaked like the back. *Young in fall and winter:* Similar to corresponding stage of *striata*, but crissum pale buff, the upper tail-coverts and tail tinged with bluish gray; flanks sometimes (in males chiefly) tinged with chestnut.

6. **D. pennsylvanica.** Wing-bands sulphur-yellow; throat pure white; crown yellow or grass-green; auriculars white or light gray. ♂: Sides, continuously, rich chestnut, connecting anteriorly with a black cheek-patch; crown bright yellow; back streaked with black and greenish yellow. ♀: Similar to the ♂, but duller. *Young in fall and winter:* Above nearly plain bright olive-green, including whole top of head; side of head ash-gray; lower parts plain white, more grayish laterally, where sometimes tinged with chestnut on the flanks.

7. **D. cærulea.** ♂: Above fine grayish blue, with black streaks on back and along sides of crown; wing-bands pure white; lower parts pure white, interrupted by a grayish blue jugular band or collar. ♀: Above grayish green, glossed with blue; beneath light greenish buff, without jugular collar. *Young* ♂: Similar to adult ♀, but whiter beneath, and upper parts more glossed with blue.

8. **D. blackburniæ.** Crown with a more or less distinct central spot of orange or yellowish. ♂: Spot on crown, superciliary stripe (widening on sides of neck), suborbital spot, with whole chin, throat and jugulum, rich cadmium-orange, most intense on throat; other markings about head, with prevailing color of upper parts, deep black, relieved by a large pure white wing-patch, covering both rows of coverts; breast and belly yellowish white, the sides streaked with black. ♀: Similar in pattern, but black replaced by streaked black and grayish olive, the orange of throat, etc., much paler.

9. **D. maculosa.** White tail-spots on the *middle portion* of the inner webs, and on all the feathers except the intermediæ. ♂: Crown bluish gray; lores, auriculars, and back, black; rump and lower parts rich gamboge-yellow, the jugulum and sides broadly striped with deep black; eyelids, postocular streak, wing-patch (covering both rows of coverts), and crissum, white. ♀: Similar to the ♂, but duller, the back mixed with olive-green, the wing-patch dissolved into two distinct bands. *Young in fall and winter:* Above olive, becoming grayish on the head and greenish on the back; throat pale grayish; no streaks across jugulum.

10. **D. coronata.** Crown with a central spot of yellow, and sides of breast, also lower part of rump, with a patch of the same; throat and other lower parts white, or whitish. ♂: Above bluish gray, streaked with black, the wing with two white

bands; sides of head black, with a supraloral and postocular streak of white; breast, especially next the yellow patches, heavily spotted or blotched with black. ♀: Similar to the ♂, but much duller, less bluish above, the streaks on breast much narrower. *Autumnal and winter plumage (adult and young)*: Upper parts brownish, and white of lower parts obscured by a wash of the same; streaks on breast indistinct or obsolete, and yellow patches much reduced in size. *Young, first plumage:* No yellow, except sometimes on rump; whole plumage thickly streaked above and below, with dusky and grayish white.

11. **D. dominica.** *Adult (sexes alike):* Above bluish gray, the back without streaks; superciliary stripe and sides of neck white, the former sometimes yellow anteriorly; lores and cheeks black, this extending downward to sides of throat in a triangular patch; whole throat clear yellow; rest of lower parts white, the sides streaked with black. *Young:* Similar, but upper parts tinged with brownish, white of lower parts soiled with the same, yellow of throat duller, and markings of head less sharply defined.

12. **D. vigorsii.** Wing-bands dull gray or grayish white. ♂: Above olive-green, the wings and tail grayish; beneath yellow, the sides indistinctly streaked with olive; the anal region and crissum (sometimns belly also) white. ♀: Above dull olive-gray, sometimes tinged with olive-green; beneath pale grayish, fading into white posteriorly, the breast usually tinged with yellow. *Young, first plumage:* Nearly like the adult ♀, *and wholly unstreaked.*

13. **D. montana.** Similar to *pinus*, but forehead, superciliary stripe, auriculars, and anal region yellow, and breast streaked with dusky.

14. **D. discolor.** ♂: Above olive-green, the back spotted with reddish chestnut; lower parts rich gamboge-yellow, the sides broadly streaked with black; wings with only one distinct band, this a pale yellow one across tips of middle coverts. ♀: Similar but somewhat duller.

c. Wing without any distinct bands or other markings.

15. **D. palmarum.** Above olive-brown, beneath yellowish. *Adult* with the crown chestnut.
    - *a. palmarum.* Yellow of lower parts confined chiefly to throat and crissum, the belly whitish, or only slightly tinged with yellow; jugulum narrowly streaked with dusky; back dull olive-brown.
    - *b. hypochrysea.* Lower parts wholly yellow; sides of breast broadly streaked with reddish chestnut; back greenish olive.

16. **D. kirtlandi.** *Adult (sexes alike):* Above bluish gray, the crown streaked, and the back spotted with black; lower parts pale sulphur-yellow, sides tinged with grayish and streaked with black, the jugulum sometimes finely and sparsely dotted with the same; side of head blackish, the eyelids white.

Dendroica æstiva (Gmel.)

YELLOW WARBLER.

Popular synonyms.—Summer Yellow-bird; Wild Canary; Yellow-poll Warbler.

Motacilla æstiva GMEL. S. N. i, 1788, 996.

Sylvia æstiva LATH.—AUD. Orn. Biog. i, 1831, 476, pl. 95.—NUTT. Man. i, 1832, 370.

Sylvicola æstiva SW. & RICH. F. B. A. ii, 1831, 211.—AUD. Synop. 1839, 58; B. Am. ii, 1841, 50, pl. 88.—NUTT. Man. 2d ed. i, 1840, 417.

Dendroica æstiva BAIRD, B. N. Am. 1858, 282; Cat. N. Am. B. 1857, No. 203; Review, 1865, 195.—COUES, Key, 1872, 97; Check List, 1873, No. 70; 2d ed. 1882, No. 111; B. N. W. 1874, 54, 232; B. Col. Val. 1878, 252.—B. B. & R. Hist. N. Am. B. i, 1874, 222, pl. 14, fig. 1.—RIDGW. Nom. N. Am. B. 1881, No. 93.

citrinella WILS. Am. Orn. ii, 1810, 111, pl. 15, fig. 5.
childreni AUD. Orn. Biog. i, 1831, 180, pl. 35.—NUTT. Man. i, 1832, 370.
rathbonia AUD. Orn. Biog. i, 1831, 333, pl. 65.
ola rathbonii AUD. Synop. 1839, 58; B. Am. ii, 1841, 53, pl. 89.

HAB. The whole of North America (to the limit of willow growth), breeding throughout its range. In winter, the whole of Middle America and northern South America (Trinidad, Tobago, Colombia, etc.), but not in West Indies, where replaced by allied species.

SP. CHAR. *Adult ♂*: Head (except occiput) and entire lower parts pure rich gamboge-yellow, the forehead and crown less pure—often obscured by an olive-green wash, more rarely intensified by an orange tinge; breast and sides broadly streaked with rich chestnut-rufous. Upper parts olive-green, the back sometimes narrowly streaked with dark chestnut, the lower rump and upper tail-coverts more tinged with yellow. Wing feathers blackish dusky centrally, but all margined, more or less broadly with olive-green or yellow, the middle coverts broadly tipped, the greater coverts and tertials broadly edged with nearly pure yellow. Tail feathers dusky, the inner webs of all mostly pure yellow. Bill black; iris brown; legs and feet olive-brownish.

No bird of North America has so extensive a range, or so general a distribution, as the Summer Yellow-bird, who appears equally at home in the subtropical lands along the Gulf coast, and the shores of the Arctic Ocean; while it is no less numerous in the parched valleys of California and Arizona than in the humid districts of the Atlantic watershed. One of the most abundant of our summer birds, it is also one of the most familiar, inhabiting, as it does, the shade trees along the streets and in the parks of the largest cities, and the orchards of the rural districts. Few of our birds are more attractive in plumage or song. In some large poplars on the opposite side of the street from my residence in Washington, a pair of these birds took up their abode, the male singing through the season during certain hours, with great regularity. On May 14, his morning rehearsal began at 4:15 o'clock, and continued till near 8 o'clock; in the evening he began at 7:30 o'clock, and continued until shortly after dusk.

The nest of this species is frequently built in an apple-tree, and is a very neat, compact, cup-shaped structure, composed of plant-fibres, slender strips of bark, etc., cosily lined with soft feathers. When the Cowbird drops its egg into its nest, it very ingeniously covers it over with a layer of the nest material, and raises the walls to a sufficient height, thus building a new nest upon the old one, and completely incarcerating the parasitic egg—even though one or more of her own be inclosed with it. Three-storied nests of this species or with two layings of parasitic eggs thus incarcerated have been found.

Dendroica cærulescens (Linn.)

BLACK-THROATED BLUE WARBLER.

Popular synonyms.—Canadian Warbler; Pine Swamp Warbler.

Motacilla canadensis LINN. S. N. ed. 12, i, 1766, 336 (not of p. 334, which=*D. coronata!*)
Sylvia canadensis WILS. Am. Orn. ii, 1810, 115, pl. 15, fig. 7.—NUTT. Man. i, 1832, 393.—AUD. Orn. Biog. ii, 1834, 309. pls. 148, 155.
Sylvicola canadensis RICH.—AUD. Synop. 1839, 61; B. Am. ii, 1841, 63, pl. 95.
Dendroica canadensis BAIRD, B. N. Am. 1858, 271; Cat. N. Am. B. 1859, No. 193.
Motacilla cærulescens GMEL. S. N. i, 1788, 960.
Dendroica cærulescens BAIRD Review, 1865, 186.—B. B. & R. Hist. N. Am. B. i, 1874, 254, pl. 12, figs. 10, 12.—COUES, Key, 1872, 99; Check List, 1873, No. 76; 2nd ed. 1882, No. 117; B. N. W. 1874, 45; B. Col. Val. 1878, 241.—RIDGW. Nom. N. Am. B. 1881, No. 94.
Sylvia sphagnosa BONAP. Jour. Phila. Ac. iv, 1824, 199 (= ♀).—NUTT. Man. i, 1832, 406.—AUD. Orn. Biog. ii, 1834, 279.
Sylvia pusilla WILS. Am. Orn. v, 1812, 100, pl. 43, fig. 4 (= ♀; not of vol. iv, p. 17, pl. 28, fig. 3, which=*Compsothlypis americana*).

HAB. Eastern North America, breeding chiefly north of the United States, but also in New England, south to Connecticut and New York; wintering in southern Florida, Bahamas and Greater Antilles.

SP. CHAR. *Adult ♂*: Above uniform dull grayish blue, including outer edges of quills and tail feathers. A narrow frontal line, entire side of head and neck, chin and throat, uniform deep black, this color extending back along the sides to the tail; rest of lower parts, including axillars and lining of the wing, pure white. Wings and tail black (outer edge of feathers grayish blue); the former relieved by a more or less extensive patch of white at base of primaries, the latter with a white patch near end of inner web of each feather except the middle pair. *Adult ♂ in fall and winter:* Similar to spring and summer plumage, but black feathers of throat margined with white, and back washed, more or less, with olive-green. *Adult ♀*: Dull grayish olive-green above, dull light greenish buff below, inclining to white on the belly; sides of head dusky olive, the eyelids and a more or less distinct superciliary streak whitish; white patch at base of primaries reduced in size, sometimes quite obsolete; white tail-spots also smaller than in the ♂.

"*First plumage, ♂.* Remiges and rectrices as in autumnal males, the former slightly paler in color. Rest of upper parts, including the wing-coverts, dark olive-brown; sides of head very dark brown; lores black; throat, jugulum, lower eyelids, and a very conspicuous supra-orbital line, pale buff; breast and sides ashy, tinged with olive. Abdomen, anal region, and crissum strong sulphur-yellow. White spot on base of primaries fully developed." (BREWSTER, Bull. Nutt. Orn. Club, 1878, p. 57.)

"*First plumage, ♀.* Remiges and rectrices as in autumnal female. Rest of upper parts, including wing-coverts and sides of head, light olive-brown. Lores dull black. Superciliary line, both eyelids, throat, jugulum, abdominal and anal regions, with crissum, light buff. Breast and sides olive, tinged with buff. Spot on base of primaries dirty-white. From two specimens, ♂ and ♀, in my collection, shot with parents at Upton, Me., August 11, 1873. The male above described shows a few black feathers on one side of the throat. Several adult females in my collection, taken both in spring and fall, lack the white wing-patch altogether. Others have it but faintly indicated." (BREWSTER, l. c.)

The Black-throated Blue Warbler is one of the many species which merely pass hurriedly through our State on the way to their summer home in the great northern woods, and back again to their

tropical winter quarters. It possesses nothing specially distinctive in its habits, either during the breeding season or when migrating, and, compared with some other species, may be considered as one of the least abundant of its family, although common enough some seasons.

Dendroica coronata (Linn.)

MYRTLE WARBLER.

Popular synonyms Myrtle Bird; Yellow-rump Warbler; Yellow-crowned Wood Warbler.

Motacilla coronata Linn. S. N. ed. 12, i, 1766, 333.

Sylvia coronata Lath.—Wils. Am. Orn. ii, 1810, 138, pl. 17, fig. 4.—Nutt. Man. i, 1832, 361. —Aud. Orn. Biog. ii, 1834, 503. pl. 153.

Sylvicola coronata Sw. & Rich. F. B. A. ii, 1831, 216.—Aud. Synop. 1839, 51; B. Am. ii, 1841, 23, pl. 76.—Nutt. Man. 2d ed. i, 1840, 411.

Dendroica coronata Gray, List Gen. B. App. 1842, 8.—Baird. B. N. Am. 1858, 278; Cat. N. Am. B. 1859, No. 194; Review, 1865, 187. —B. B. & R. Hist. N. Am. B. i, 1874, 227, pl. 12, figs. 9, 12.

Dendrœca coronata Scl.—Coues, Key, 1872, 100; Check List, 1873, No. 78; 2d ed. 1882, No. 119; B. N. W. 1874, 57; B. Col. Val. 1878, 278. —Ridgw. Nom. N. Am. B. 1881, No. 95.

Hab. Whole of North America, but chiefly east of Rocky Mountains; very rare, and perhaps merely straggling during migrations, in western portions, although sometimes not uncommon in California. Breeds from northern New England northwards, and perhaps southward along higher Alleghanies. Resident in Jamaica; winters in greater portion of Eastern U. S. (regularly north to about 40°), and also in Mexico, Guatemala and the Greater Antilles.

"Sp. Char. Above bluish-ash, streaked with black. Under parts white. The forepart of breast and the sides black, the feathers mostly edged narrowly with white. Crown, rump, and sides of breast yellow. Cheeks and lores black. The eyelids and a superciliary stripe, two bands on the wing and spots on the outer three tail feathers white. *Female* of duller plumage and browner above. Length, 5.65; wing, 3.00; tail, 2 50.

"Autumnal and winter birds are very much duller and more obscurely colored, the upper parts of an umber cast with the streaks almost obsolete; the black of the breast wanting or but just indicated, and the yellow patch on crown almost concealed by the brown tips to the feathers, and those on side of breast quite dull.

"A spring male (52,283) from Washington is remarkable in having the adjoining series of feathers down the middle of the back with their inner webs broadly edged with yellow. In this respect it differs from all others that we have noticed." (*Hist. N. Am. B.*)

In the southern portion of the State (north at least to the line of the Ohio and Mississippi Railroad), this species is usually an abundant winter resident. It may often be seen in midwinter, when the ground is covered with snow, in the door-yards along with Snowbirds (*Junco hyemalis*), Tree Sparrows, and other familiar species,

gleaning bread crumbs from the door-steps, or hunting for spiders or other insect tidbits in the nooks of the garden fence or the crevices in the bark of trees; and at evening, flying in considerable companies, to the sheltering branches of the thickest tree tops (preferably evergreens), where they pass the night. Not unfrequently, however, they roost in odd nooks and crannies about the buildings, or even in holes in the straw- or hay-stacks, in the barn-yard. A favorite food of this species are the berries of the Poison-vine (*Rhus toxicodendron*), and during the early part of winter large numbers of them may be seen wherever vines of this species are abundant.

During the winter season the plumage of this bird is dull and unattractive, the sexes being scarcely distinguishable by color; but as spring advances, the male assumes a parti-colored livery of black, slate-blue, white and yellow, which renders him one of the most striking among the feathered rivals of the bees which hum among the blooming apple-trees. At this season, too, the male has an attractive song, somewhat like that of the Summer Yellow-bird, but more of a warble and sweeter in tone.

According to Mr. McFarlane, of the Hudson's Bay Company, the Yellow-rumped Warbler reaches the high northern latitudes, near the Arctic coast, late in May, and leaves that region in September. He states that it nests in moderate abundance at Anderson River, and that, although in a few instances the nest was placed on the ground, it generally built four or five feet up in a low spruce tree.

A nest found at Parsboro' Nova Scotia, is thus described by Dr. Brewer (*Hist. N. Am. B.* Vol. I., p. 228):

"The nest was built on a horizontal branch, the smaller twigs of which were so interlaced as to admit of its being built upon them, though their extremities were interwoven into its rim. The nest was small for the bird, being only two inches in depth and four and a half in diameter. The cavity is one and a half inches deep and two and a half wide. Its base and external portions consist of fine, light, dry stalks of wild grasses, and slender twigs and roots. Of the last the firm, strong rim of the nest is exclusively woven. Within, the nest is composed of soft, fine grasses, downy feathers, and the fine hair of the smaller mammals."

Dendroica maculosa (Linn.)

MAGNOLIA WARBLER.

Popular synonym.—Black and Yellow Warbler.

Motacilla maculosa GM. S. N. i, 1788, 984.

Sylvia maculosa LATH.—AUD. Orn. Biog. i, 1831, 260; ii, 1834, 145; v, 1839, 458, pls. 50, 123.—NUTT. Man. i, 1832, 370.

Sylvicola maculosa SW. & RICH. F. B. A. ii, 1831, 213, pl. 40.—AUD. Synop. 1839, 61; B. Am. ii, 1841, 65, pl. 96.

Dendroica maculosa BAIRD, B. N. Am. 1858, 284; Cat. N. Am. B. 1859, No. 204; Review, 1865, 206.—B. B. & R. Hist. N. Am. B. i, 1874, 232, pl. 14, fig. 2.

Dendrœca maculosa SCL.—COUES, Key, 1872, 102; Check List, 1873, No. 84; 2d ed. 1882, No. 125; B. N. W. 1874, 62; B. Col. Val. 1878, 200.—RIDGW. Nom. N. Am. B. 1881, No. 97.

Sylvia magnolia WILS. Am. Orn. iii, 1811, 63, pl. 23.

HAB. Eastern North America, west to eastern base of Rocky Mountains; breeds from northern New England northward, and winters in Bahamas, Cuba (rare), eastern Mexico, and Central America to Panama.

"SP. CHAR. *Male in spring.* Bill dark bluish black, rather lighter beneath. Tail dusky. Top of head light grayish blue. Front, lores, cheeks, and a stripe under the eye, black, running into a large triangular patch on the back between the wings, which is also black. Eyelids and a stripe from the eye along the side of head white. Upper tail-coverts black, some of the feathers tipped with grayish. Abdomen and lower tail-coverts white. Rump and under parts, except as described, yellow. Lower throat, breast, and sides streaked with black; the streaks closer on the lower throat and fore breast. Lesser wing-coverts, and edges of the wing and tail, bluish gray, the former spotted with black. Quills and tail almost black; the latter with a square patch of white on the inner webs of all the tail feathers (but the two inner) beyond the middle of the tail. Two white bands across the wings (sometimes coalesced into one) formed by the middle and secondary coverts. Part of the edge of the inner webs of the quills white. Feathers margining the black patch on the back behind and on the sides tinged with greenish. Length, 5 inches; wing, 2 5⁰; tail, 2.25. Autumnal males differ in absence of black of back, front, sides of head, and to a considerable degree beneath, and in much less white on the wings, and head.

"*Female in spring.* Similar, but all the colors duller. Black of the back restricted to a central triangular patch." (*Hist. N. Am. B.*)

The Magnolia Warbler, probably the most showy of the *Dendroicæ*, is an abundant species during its migrations, but does not breed within the limits of the State. It is one of the most agile of its tribe, its quick and restless movements being more like those of the Redstart than those of its nearest kindred. The tail is carried somewhat elevated and widely expanded, to display the broad white band across the middle portion of the inner webs of the feathers, which, together with the bold contrasts of black, yellow, and blue-gray of the plumage, render it both conspicuous and beautiful.

Dendroica cærulea (Linn.)

CERULEAN WARBLER.

Popular synonyms.—Blue Warbler; White-throated Blue Warbler; Azure Warbler.

Sylvia cœrulea WILS. Am. Orn. ii, 1810, 141, pl. 17, fig. 5.

Sylvicola cœrulea RICH.—AUD. Synop. 1839, 56; B. Am. ii, 1841, 45, pl. 86.

Dendroica cœrulea BAIRD, B. N. Am. 1858, 280; Cat. N. Am. B. 1859, No. 201; Review, 1865, 191.—B. B. & R. Hist. N. Am. B. i, 1874, 235, pl. 13, figs. 10, 11.

Dendrœca cærulea SCL.—COUES, Key, 1872, 99; Check List, 1872, No. 77; 2d ed. 1882, No. 118; B. N. W. 1874, 56, 233; B. Col. Val. 1878, 267.—RIDGW. Nom. N. Am. B. 1881, No. 98.

Sylvia rara WILS. Am. Orn. iii, 1811, 119, pl. 27, fig. 2.—NUTT. Man. i, 1832, 393.—AUD. Orn Biog. i, 1832, 258, pl. 49.

Sylvia azurea STEPH. Gen. Zool. x, 1817, 653.—NUTT. Man. i. 1832, 407.—AUD. Orn. Biog. i, 1832, 255, pl. 48.

HAB. Eastern United States, but chiefly west of the Alleghanies; north to Canada West and (casually) Connecticut. Breeds very abundantly throughout the heavily wooded districts of the Mississippi Valley. Winters in Central America and Northern South America; Cuba.

"SP. CHAR. *Male.* Above bright blue, darkest on the crown, tinged with ash on the rump; middle of back, scapulars, upper tail-coverts, and sides of the crown, streaked with black. Beneath white; a collar across the breast, and streaks on the sides, dusky blue. Lores, and a line through and behind the eye (where it is bordered above by whitish), dusky-blue; paler on the cheeks. Two white bands on the wings. All the tail feathers except the innermost with a white patch on the inner web near the end. *Female*, greenish blue above, brightest on the crown; beneath white, tinged with greenish yellow, obsoletely streaked on the sides; eyelids and a superciliary line greenish white. Length, 4.25; wing, 2.65; tail, 1.90.

"The autumnal adult plumage of both sexes is, in every respect, exactly like the spring dress. Young males in late summer are very similar to adult females, but are purer white below, and less uniform greenish blue above, the dark stripes on sides of the crown and black centres to scapulars being quite conspicuous; the young female, at the same season, is similar in pattern to the adult, but is dull green above, without any tinge of blue, and light buffy yellow below.

"There is considerable variation in adult males, especially in the width of the pectoral collar; one (No. 60,877, Mt. Carmel, Wabash Co., Ill., Aug. 9) has this entirely interrupted. In this individual there is no trace of a whitish supra-auricular streak; while others from the same locality, and obtained at the same date, have the band across the jugulum continuous, and a quite distinct white streak over the ear-coverts." (*Hist. N. Am. B.*)

This pretty little warbler is by far the most abundant of the summer-resident members of the family in Illinois. It frequents chiefly if not exclusively the tall timber of creek and river bottoms, where it keeps much among the tree-tops rarely descending to the undergrowth, and then perhaps only to search for material for its nest.

"It is a bird of the woods, everywhere associated with the beautiful tall forests of the more northern counties of Western New York, sometimes found in the open woods of pasture-lands, and quite partial to hardwood trees. In its flitting motions in search of insect-prey, and in the jerking curves of its more prolonged flight, as also in structure, it is a genuine Wood Warbler, and keeps, for the most part, to what Thoreau calls "the upper story" of its sylvan domain. Its song, which is frequent, and may be heard for some distance, may be imitated by the syllables *rheet, rheet, rheet, rheet, ridi, idi, e-e-e-e-e-e-e*; beginning with several soft, warbling notes, and ending in a rather prolonged but quite musical squeak. The latter and more rapid part of the strain, which is given in the upward slide, approaches an insect quality of tone which is more or

less peculiar to all true Warblers. This song is so common here as to be a universal characteristic of our tall forests. The bird is shy when started from the nest, and has the sharp chipping alarm-note common to the family. The nest is saddled on a horizontal limb of considerable size, some distance from the tree, and some forty or fifty feet from the ground. Small, and very neatly and compactly built." (Rev. J. H. Langille, in *Ornithologist and Oologist*, Dec. 1882, p. 191.)

In *History of North American Birds*, Vol. III., page 505, Dr. Brewer describes a nest of this species, as follows:

"A nest, containing one egg, of the Cærulean Warbler, was obtained in June, 1873, by Frank S. Booth, the son of James Booth, Esq., the well known taxidermist of Drummondville, Ontario, near Niagara Falls. The nest was built in a large oak-tree at the height of fifty feet or more from the ground. It was placed horizontally on the upper surface of a slender limb, between two small twigs, and the branch on which it was thus saddled was only an inch and a half in thickness. Being nine feet from the trunk of the tree, it was secured with great difficulty. The nest is a rather slender fabric, somewhat similar to the nest of the Redstart, and quite small for the bird. It has a diameter of $2\frac{2}{5}$ inches, and is $1\frac{1}{3}$ inches in depth. Its cavity is 2 inches wide at the rim, and 1 inch in depth. The nest chiefly consists of a strong rim firmly woven of strips of fine bark, stems of grasses, and fine pine needles, bound round with flaxen fibres of plants and wool. Around the base a few bits of hornets' nests, mosses, and lichens are loosely fastened. The nest within is furnished with fine stems and needles, and the flooring is very thin and slight. The egg is somewhat similar in its general appearance to that of *D. æstiva*, but is smaller and with a ground-color of a different shade of greenish white. It is oblong-oval in shape, and measures .70 of an inch in length by .50 in breadth. It is thinly marked over the greater portion of its surface with minute dottings of reddish brown. A ring of confluent blotches of purple and reddish brown surrounds the larger end."

In the extreme northern part of the State, the Cerulean Warbler is, according to Mr. Nelson, "a regular but rare migrant. May 12th to 20th, and the first of September. Prefers high woods. Very abundant in the southern half of the State. Rare summer resident here, but near Detroit, Michigan, I am informed it is one of the common species at this season."

Dendroica pennsylvanica (Linn.)

CHESTNUT-SIDED WARBLER.

Motacilla pennsylvanica Linn. S. N. ed. 12, i, 1766, 333.
Sylvia pennsylvanica Wils. Am. Orn. ii, 1810, 99, pl. 14, fig. 5.
Dendroica pennsylvanica Baird, B. N. Am. 1858, 279; Cat. N. Am. B. 1859, No. 200; Review, 1865, 191.—B. B. & R. Hist. N. Am. B. i, 1874, 245, pl. 13, figs. 7, 8.
Dendræca pennsylvanica Scl. & Salv.—Coues, Key, 1872, 101; Check List, 1873, No. 83; 2d ed. 1882, No. 124; B. N. W. 1874, 62; B. Col. Val. 1878, 244.—Ridgw. Nom. N. Am. B. 1881, No. 99.
Motacilla icterocephala Linn. S. N. ed. 12, i, 1766, 334.
Sylvia icterocephala Lath.—Aud. Orn. Biog. i, 1832, 306, pl. 59.—Nutt. Man. i, 1832, 380.
Sylvicola icterocephala Rich.—Aud. Synop. 1839, 54; B. Am. ii, 1841, 35, pl. 81.

Hab. Eastern North America, breeding from northern United States northward into British America. Winters in southern Mexico, Honduras, Guatemala, and thence to Panama; Bahamas.

"Sp. Char. *Male.* Upper parts streaked with black and pale bluish gray, which becomes nearly white on the forepart of the back; the middle of the back glossed with greenish yellow. The crown is continuous yellow, bordered by a frontal and superciliary band, and behind by a square spot of white. Loral region black, sending off a line over the eye, and another below it. Ear-coverts and lower eyelid and entire under parts pure white; a purplish chestnut stripe starting on each side in a line with the black mustache, and extending back to the thighs. Wing- and tail-feathers dark brown, edged with bluish gray, except the secondaries and tertials, which are bordered with light yellowish green. The shoulders with two greenish white bands. Three outer tail-feathers with white patches near the end of the inner webs.

"*Female* like the male, except that the upper parts are yellowish green, streaked with black; the black mustache scarcely appreciable. Length, 5.00; wing, 2.50; tail, 2.20.

"The young in autumn is very different from either male or female in spring. The entire upper parts are of a continuous light olive-green; the under parts white; the sides of the head, neck, and breast ash-gray, shading insensibly into and tinging the white of the chin and throat. No black streaks are visible above or on the cheeks, and the eye is surrounded by a continuous ring of white, not seen in spring. In this plumage it has frequently been considered as a distinct species.

"The male in this plumage may usually be distinguished from the female by possessing a trace, or a distinct stripe, of chestnut on the flanks, the young female at least lacking it." (*Hist. N. Am. B.*)

Perhaps the prettiest of our Warblers, this elegant little bird is usually, especially during the fall migration, one of the most abundant. It breeds in the northern portion of the State, but how far southward is not known. In June, 1871, the writer saw a pair in the scrubby woods bordering Fox Prairie, in Richland county, at a time when all the summer residents were nesting; but they may

have been merely belated migrants. Mr. T. H. Douglas, of Waukegan, writes me that he saw a pair of Chestnut-sided Warblers at that place on the 31st of July, and that "as the male had a worm in his mouth they evidently had young."

This species has a very pretty song, resembling somewhat that of the summer Yellowbird (*D. æstiva*), but "less of a whistle and somewhat louder." The nest is built in bushes, along the edge of a thicket or low woods, and resembles in its materials that of other species of the genus, while the eggs also are lacking in distinctive characteristics.

Dendroica castanea (Wils.)

BAY-BREASTED WARBLER.

Popular synonym. Autumnal Warbler.

Sylvia castanea WILS. Am. Orn. ii, 1810, 97, pl. 14, fig. 4.—NUTT. Man. i, 1832, 382.—AUD. Orn. Biog. i, 1832, 358, pl. 69.

Sylvicola castanea RICH.—AUD. Synop. 1839, 53; B. Am. ii, 1841, 34, pl. 80.

Dendroica castanea BAIRD, B. N. Am. 1858, 276; Cat. N. Am. B. 1859, No. 197; Review, 1865. 189.—B. B. & R. Hist. N. Am. B. i, 1874, 251, pl. 13, figs. 4, 5.

Dendrœca castanea LAWR.—COUES, Key, 1872, 101; Check List, 1873, No. 82; 2d ed. 1882, No. 123; B. N. W. 1874, 61; B. Col. Val. 1878, 243.—RIDGW. Nom. N. Am. B. 1881, No. 100.

Sylvia autumnalis WILS. Am. Orn. iii, 1811, 65, pl. 23, fig. 3.—NUTT. Man. i, 1832, 390.—AUD. Orn. Biog. i, 1832, 449, pl. 88.

HAB. Eastern North America, north to Hudson's Bay, west to edge of Great Plains; breeding from northern New England northward. Winters in Central America and northern South America (Colombia).

"SP. CHAR. *Male.* Crown dark reddish chestnut; forehead and cheeks, including a space above the eye, black; a patch of buff-yellow behind the cheeks. Rest of upper parts bluish gray streaked with black, the edges of the interscapulars tinged with yellowish, of the scapulars with olivaceous. Primaries and tail-feathers edged externally with bluish gray, the extreme outer ones with white; the secondaries edged with olivaceous. Two bands on the wing and the edges of the tertials white. The under parts are whitish with a tinge of buff; the chin, throat, forepart of breast, and the sides, chestnut-brown, lighter than the crown. Two outer tail-feathers with a patch of white on the inner web near the end; the others edged internally with the same. *Female* with the upper parts olive, streaked throughout with black, and an occasional tinge of chestnut on the crown. Lower parts with traces of chestnut, but no stripes. Length of male, 5.00; wing, 3.05; tail, 2.40.

"The females and immature males of this species differ much from the spring males, and are often confounded with other species, especially with *D. striata*. A careful comparison of an extensive series of immature specimens of the two species shows that in *castanea* the under parts are seldom washed uniformly on the throat and breast with yellowish green, but while this may be seen on the sides of the neck and breast, or even across the latter, the chin and throat are

nearly white, the sides tinged with dirty brown, even if the (generally present) trace of chestnut be wanting on the sides. There is a buff tinge to the under tail-coverts; the quills are abruptly margined with white, and there are no traces (however obsolete) of streaks on the breast. In *D. striata* the under parts are quite uniformly washed with greenish yellow nearly as far back as the vent, the sides of the breast and sometimes of the belly with obsolete streaks; no trace of the uniform dirty reddish brown on the sides; the under tail-coverts are pure white. The quills are only gradually paler towards the inner edge, instead of being rather abruptly white." (*Hist. N. Am. B.*)

Comparatively little is known of the habits of this species. It passes by in spring and fall, being sometimes abundant at both seasons, but does not tarry long. It breeds in the dense coniferous forests of the north, from the shores of Lake Superior to northern Maine. In general habits, at all times, it closely resembles other species of the genus.

In Oxford county, Maine, says Mr. Maynard*, "these birds are found in all the wooded sections of this region, where they frequent the tops of tall trees. The first part of the song is like that of the Black-poll Warbler, but it has a terminal warble similar to that of the Redstart, to which it bears a striking resemblance, with the exception that it is given with less energy. This species seems to be confined during the building season to the region just north of the White Mountains range."

Dendroica striata (Forst.)

BLACK-POLL WARBLER.

Muscicapa striata Forst. Philos. Trans. lvii, 1772, 406, 428.

Sylvia striata Lath.—Wils. Am. Orn. iv, 1811, 40, pl. 30, fig. 3; vi, 1812, 101, pl. 54, fig. 2.—Nutt. Man. i, 1832, 383.—Aud. Orn. Biog. ii, 1834, 201, pl. 133.

Sylvicola striata Sw. & Rich. F. B. A. ii, 1831, 218.—Aud. Synop. 1839, 53; B. Am. ii, 1841, 28, pl. 78.

Dendroica striata Baird, B. N. Am. 1858, 280; Cat. N. Am. B. 1859, No. 202: Review, 1865, 192.—B. B. & R. Hist. N. Am. B. i, 1874, 248, pl. 13, fig. 9.

Dendrœca striata Blakist. Ibis, 1863, 62.—Coues, Key 1872, 100; Check List, 1873, No. 81; 2d ed. 1882, No. 122; B. N. W. 1874, 60; B. Col. Val. 1878, 288.—Ridgw. Nom. N. Am. B. 1881, No. 101.

Hab. In summer, northern North America, breeding from northern New England and coast of Labrador to the coast of Alaska (as far south as Fort Kenai) and shores of the Arctic Ocean; migrating through eastern United States; wintering in Cuba (rare) and parts of South America (Colombia and Chili?).

* Proc. Boston Soc. Nat. Hist. xiv, Oct. 18, 1871, pp. 10, 11.

"SP. CHAR. *Male.* Crown, nape, and upper half of the head black; the lower half, including the ear-coverts, white, the separating line passing through the middle of the eye. Rest of upper parts grayish ash, tinged with brown, and conspicuously streaked with black. Wing and tail-feathers brown, edged externally (except the inner tail-feathers) with dull olive-green. Two conspicuous bars of white on the wing-coverts, the tertials edged with the same. Under parts white, with a narrow line on each side of the throat from the chin to the sides of the neck, where it runs into a close patch of black streaks continuing along the breast and sides to the root of the tail. Outer two tail-feathers with an oblique patch on the inner web near the end; the others edged internally white. *Female* similar, except that the upper parts are olivaceous, and, even on the crown, streaked with black; the white on the sides and across the breast tinged with yellowish; a ring of the same round the eye cut by a dusky line through it. Length of male, 5.75; wing, 3.00; tail, 2.25." (*Hist. N. Am. B.*)

The autumnal dress is very different from that of spring. The upper parts are light olive-green, indistinctly streaked with dusky; beneath greenish yellow, obsoletely streaked on the breast and sides; the under tail-coverts, only, pure white, a yellowish ring round the eye, and a superciliary one of the same color. In this dress it is very easily confounded with the autumnal *D. castanea.* The differences, as far as tangible, will be found detailed under the head of the latter species.

"The young bird in its first dress is also quite different, again, from the autumnal-plumaged birds. The upper parts are hoary-grayish, the lower white; each feather of the whole body, except lower tail-coverts, with a terminal bar or transverse spot of blackish, those on the upper parts approaching the base of the feathers along the shaft. Wings and tail much as in the autumnal plumage." (*Hist. N. Am. B.*)

Except the Yellow-crowned Warbler, (*D. coronata*) and the Summer Yellowbird (*D. æstiva*), the Black-poll Warbler goes further north than any other species of the genus, its breeding range extending from the desolate plains of northern Labrador to the shores of the Arctic Ocean and coast of Norton Sound. It is usually an abundant species in the Atlantic States during its migrations, and in spring is the latest of the migrants.

Dendroica blackburniæ (Gmel.)

BLACKBURNIAN WARBLER.

Popular synonyms. Orange-throated Warbler; Hemlock Warbler.

Motacilla blackburniæ GMEL. S. N. i, 1788, 977.

Sylvia blackburniæ LATH—WILS. Am. Orn. iii, 1811, 64, pl. 23, fig. 3.—NUTT. Man. ii, 1831, 379.—AUD. Orn. Biog. ii, 1834, 208; v, 1839, 73, pl. 135, 399.

Sylvicola blackburniæ JARD.—AUD. Synop. 1839, 37; B. Am. ii. 1841, 48, pl. 87.

Dendroica blackburniæ BAIRD B. N. Am. 1858, 274; Cat. N. Am. B. 1859, No. 196; Review, 1865, 189.—B. B. & R. Hist. N. Am. B. i, 1874, 237, pl. 13, figs. 2, 3.

Dendrœca b'ackburniæ SCL.—COUES, Key, 1872, 100; Check List, 1873, No. 80; 2d ed. 1882, No. 121 ("*blackburnæ*"); B. N. W. 1874, 59; B. Col. Val. 1878, 284.—RIDGW. Nom. N. Am. B. 1881, No. 102.

Sylvia parus WILS. Am. Orn. v, 1812, 114, pl. 44, fig. 3.—NUTT. Man. i, 1832, 392.—AUD. Orn. Biog. ii, 1834, 205, pl. 134.

Sylvicola parus BONAP.—AUD. Synop. 1839, 55; B. Am. ii, 1841, 40, pl. 83.

HAB. Eastern North America, breeding from northern United States northward to British Provinces; straggling westward to Utah and New Mexico. Winters in eastern Mexico and south to Colombia and Ecuador; Bahamas; Greenland?

"SP. CHAR. Upper parts nearly uniform black, with a whitish scapular stripe and a large white patch in the middle of the wi g-coverts. An oblong patch in the middle of the crown, and the entire side of the head and neck (including a superciliary stripe from the nostrils), the chin, throat, and forepart of the breast, bright orange-red. A black stripe from the commissure passing around the lower half of the eye, and including the ear-coverts; with, however, an orange crescent in it, just below the eye, the extreme lid being black. Rest of under parts white, strongly tinged with yellowish orange on the breast and belly, and streaked with black on the sides. Outer three tail-feathers white, the shafts and tips dark brown; the fourth and fifth spotted much with white; the other tail-feathers and quills almost black. *Female* similar; the colors duller; the feathers of the upper parts with olivaceous edges. Length, 5.50; wing, 2.83; tail, 2.25.

"Autumnal males resemble the females. They have two white bands instead of one; the black stripes on the sides are larger; under parts yellowish; the throat yellowish, passing into purer yellow behind.

"Autumnal young birds have the same pattern of coloration, but the dark portions are dull grayish umber, with the streaks very obsolete, and the light parts dull buffy-white, tinged with yellow on the jugulum; there is neither clear black, bright yellow, nor pure white on the plumage, except the latter on the wing-bands and tail-patches." (*Hist. N. Am. B.*)

Few of our birds are more beautiful than the full-plumaged male of this lovely bird, whose glowing orange throat renders it a conspicuous object among the budding and blossoming branches. The species is migratory in Illinois, passing through in spring and fall, its summer home being chiefly, if not wholly, to the northward of our State, while it passes the winter in Central America and northern South America. The Blackburnian Warbler breeds in the northern portion of New York, and in portions of Massachusetts, and thence northward to the British Provinces, frequenting the coniferous forests, and building its nest in bushes or small trees a few feet above the ground.

Dendroica dominica albilora Baird.

SYCAMORE WARBLER.

Popular synonyms. White-cheeked Warbler; White-browed Yellow-throated Warbler.

Dendroica or *Dendrœca dominica.*
Dendroica or *Dendrœca superciliosa.*
Sylvia or *Sylvicola pensilis.*
} All quotations for localities west of the Alleghanies and in middle America.

Dendroica dominica var. *albilora* Baird, Ridgw. Am. Nat. vii, 1873, 606.—Coues, Check List, 1873, No. 88*a*.—B. B. & R. Hist. N. Am. B. i, 1874, 241, pl. 14, fig. 7.
Dendrœca dominica albilora Ridgw. Nom. N. Am. B. 1881, No. 103*a*.

Hab. Mississippi Valley in summer, north to the Great Lakes, east to West Virginia, and west to eastern Kansas; winters in Mexico (both coasts), Guatemala and Honduras.

Sp. Char. *Adult (sexes alike).* Above ash-gray, without streaks, the forehead or sides of crown, or both, black. Wings blackish, the middle and greater coverts broadly tipped with white and edged with ash-gray; remiges edged with ash-gray. Tail dusky, the feathers edged with ash-gray, the inner webs of three outer rectrices with a large white patch covering the terminal portion—on the lateral feathers occupying nearly half of the web. A white superciliary stripe, sometimes tinged with yellow anteriorly; a crescentic spot beneath eye, and large space on side of neck immediately behind auriculars, also white. Lores and auriculars deep black, this continued down each side of the throat, but on sides of breast broken into stripes which extend along sides to the flanks. Chin, throat, and jugulum bright gamboge-yellow, the first white anteriorly. Rest of lower parts except as described, white. Bill deep black; iris brown; legs and feet brownish. Wing about 2.50–2.65; tail, 2.00–2.25; exposed culmen, .45–.48; tarsus, .65–.70.

The plumage of the adult in fall and early winter differs from the spring livery, as described above, only in having the ash-gray, and also the white of the abdomen, slightly tinged with brownish. The young in first autumn are essentially similar to autumnal adults, but have the brownish wash or discoloration more distinct, and the markings consequently less sharply defined.

The Sycamore Warbler is a common summer resident in the bottom-lands, where, according to the writer's experience, it lives chiefly in the large sycamore trees along or near water courses. On this account it is a difficult bird to obtain during the breeding season, the male usually keeping in the topmost branches of the tallest trees, out of gunshot, and often, practically, out of sight, although his presence is betrayed by his loud, very unwarbler-like song. The song of this species is so much like that of the Indigo Bird that it requires a practiced ear to distinguish them; the tone is remarkably similar, but there is a difference in the modulation which after one becomes thoroughly acquainted with it renders it distinguishable. In its motions, this warbler partakes much of the character of a creeper, often ascending or descending trunks of trees or following their branches, much in the manner of a *Mniotilta*.

The first specimen which the writer ever saw was creeping about the eaves and cornices of a frame dwelling house in the center of the town of Mt. Carmel. Very often, however, it could not be distinguished from other warblers, so far as its actions were concerned.

Mr. Nelson (page 35 of his list) makes the following record of his experience with this species at Mt. Carmel:

"First noted August 30, when they were found to be abundant in a group of elm trees on the river bank near town. During the succeeding three days they were plentiful, and thirty-six specimens were taken and many more seen. After September 2 not a specimen was to be found, though diligent search was made. While here they showed great preference for the elm trees before mentioned, none being found elsewhere. They uttered the faint "cheep" common to most warblers, and one was heard delivering a low song from the top of a tall elm. The notes were so low that even when standing under the same tree the song could only be distinguished by careful listening."

The distribution of this species is not yet well made out; it probably occurs, however, in all parts of the State where there are suitable localities; i. e., densely timbered creek or river bottoms, where large sycamore trees are abundant. Dr. R. M. W. Gibbs informs me (in letter) that he took a specimen at Kalamazoo, Michigan, (lat. 40° 25) on May 5, 1877, and another in the fall; and, though probably erroneously, that it probably goes farther north to breed.

Mr. Nelson records it as being in Cook county a very rare summer visitant from the south. Prof. D. S. Jordan, of Indianapolis, Indiana, writes that this species is a common summer resident in that vicinity, and that he has trustworthy information of its rather common occurrence, in summer, in the vicinity of Detroit, Michigan.

Dendroica virens (Gmel.)

BLACK-THROATED GREEN WARBLER.

Motacilla virens GMEL. S. N. i, 1788, 985.

Sylvia virens LATH.—WILS. Am. Orn. iv, 1810, 127, pl. 17, fig. 3.—NUTT. Man. i, 1832, 376.—AUD. Orn. Biog. iv, 1838, 70, pl. 399.

Sylvicola virens RICH.—AUD. Synop. 1839, 55; B. Am. ii, 1841, 42, pl. 84.

Dendroica virens BAIRD, B. N. Am. 1858, 267; Cat. N. Am. B. 1859, No. 189; Review, 1865, 182.—B. B. & R. Hist. N. Am. B. i, 1874, 261, pl. 12, fig. 4.

Dendrœca virens SCL.—COUES, Key, 1872, 97; Check List, 1873, No. 71; 2d ed. 1882, No. 112; B. N. W. 1874, 54; B. Col. Val. 1878, 240.—RIDGW. Nom. N. Am. B. 1881, No. 107.

HAB. Eastern United States and Canada, breeding from higher mountains of Middle States and New England northward; straggling occasionally to Greenland or even to Eur pe (Heligoland); winters in Cuba and Middle America, south to Panama.

"SP. CHAR. *Male.* Upper parts, exclusive of wing and tail, clear yellow olive-green, the feathers of the back with hidden streaks of black. Forehead and sides of head and neck, including a superciliary stripe, bright yellow. A dusky olive line from the bill, through the eye, and another below it. Chin, throat, and forepart of the breast, extending some distance along on the sides, continuous black; rest of under parts white, tinged with yellow on the breast and flanks. Wings and tail feathers dark brown, edged with bluish gray; two white bands on the wing; the greater part of the three outer tail-feathers white. *Female* similar, but duller; the throat yellow; the black of breast much concealed by white edges; the sides streaked with black. Length, 5 inches; wing, 2.58; tail, 2.30.

"The autumnal male has the black of throat and breast obscured by whitish tips. Females are yellowish white beneath, tinged with grayish towards the tail." (*Hist N. Am. B.*)

"*First plumage. Male.* Remiges and rectrices as in adult; greater and median wing-coverts just tipped with soiled white, forming two very narrow, indistinct wing-bands. Rest of upper parts dark slaty-brown, each feather of the back edged with bright greenish. Superciliary stripes (just meeting in a narrow line on the forehead), eyelids, maxillary line, and chin, bright yellow. Sides of head dark slate; under parts soiled white, each feather on the breast and sides with a terminal spot of black; on the throat and jugulum, these spots become large blotches of dark slate, the feathers being just tipped and edged with light yellow. (From a specimen in my collection shot at Cambridge, Mass, July 30, 1875.) Like most of the previously described young Warblers, this bird has a narrow central line of yellow feathers extending down the throat and jugulum to the breast." (BREWSTER, Bull. Nutt. Orn. Club, Apr. 1878, 57.)

Little need be said of this bird further than that it is one of the army of migrants passing hurriedly through in spring to its breeding grounds in the northern coniferous forests and in fall on the way to its tropical winter home. It is a beautiful bird, one of the most elegant of its family, and is at times extremely abundant.

Dendroica vigorsii (Aud.)

PINE WARBLER.

Popular synonym. Pine Creeping Warbler.

Sylvia pinus WILS. Am. Orn. iii, 1811, 25, pl. 19, fig. 4.—NUTT. Man. I, 1832, 387.—AUD. Orn. Biog. ii, 1834, 232, pl. 111.

Sylvicola pinus JARD.—AUD. Synop. 1839, 54; B. Am. ii, 1841, 37, pl. 82.

Dendroica pinus BAIRD, B. N. Am. 1858, 277; Cat. N. Am. B. 1859, No. 198; Review, 1865, 190.—B. B. & R. Hist. N. Am. B. i, 1874, 268, pl. 13, fig. 6.

Dendrœca pinus MCILWRAITH, Proc. Essex. Inst. v, 1866, 86.—COUES, Key, 1872, 104; Check List, 1873, No. 91; 2d ed. 1882, No. 134; B. N. W. 1874, 69; B. Col. Val. 1878, 251.—RIDGW. Nom. N. Am. B. 1881, No. 111.

Sylvia vigorsii AUD. Orn. Biog. i, 1832, 153, pl. 30.

Vireo vigorsii NUTT. Man. i, 1832, 318.

Dendroica vigorsii STEJN. Auk, ii, Oct. 1885, 343.

HAB. Eastern United States, Canada and New Brunswick; west to Kansas and Minnesota, south only to Gulf States and Bahamas; breeds nearly throughout its range, and winters chiefly south of 40°.

"SP. CHAR. *Spring male.* Upper parts nearly uniform and clear olive-green, the feathers of the crown with rather darker shafts. Under parts generally, except in the middle of the belly behind, and under tail-coverts (which are white), bright gamboge yellow, with obsolete streaks of dusky on the sides of the breast and body. Sides of head and neck olive-green like the back, with a broad superciliary stripe; the eyelids and a spot beneath the eye very obscurely yellow; wings and tail brown; the feathers edged with dirty white, and two bands of the same across the coverts. Inner web of the first tail-feather with nearly the terminal half, of the second with nearly the terminal third, dull inconspicuous white. Length, 5.50; wing, 3.00; tail, 2.40. (1,356.)

"*Spring female.* Similar, but more grayish above, and almost grayish white, with a tinge of yellow beneath, instead of bright yellow. *Young.* Umber-brown above, and dingy pale ashy beneath, with a slight yellowish tinge on the abdomen. Wing and tail much as in the autumnal adult.

"Autumnal males are much like spring individuals, but the yellow beneath is softer and somewhat richer, and the olive above overlaid with a reddish umber tint." (*Hist. N. Am. B.*)

So far as the western portion of its habitat is concerned, the name of *Pine* Creeping Warbler, as applied to this species is decidedly a misnomer; for in the Mississippi Valley, where its breeding range is probably pretty general, conifers of any species are comparatively rare and exceedingly local. It has been found feeding its young in the heavy timber of the Wabash bottomlands, near Mount Carmel, but the writer has not been able to discover its nest. It is apparently not uncommon there, though not so often observed as birds of more conspicuous plumage or louder song. In the East its nest is said to be "placed at a considerable height, sometimes fifty feet or more from the ground, and is usually fastened to the twigs of a small branch."* The song of the Pine Creeping Warbler is a low trill, somewhat like that of the Chipping Sparrow or Worm-eating Warbler.

Although when in the trees the movements of this species recall those of a *Mniotilta*, or, rather, the *D. dominica*, when on the ground it progresses by a graceful gliding walk, much after the manner of the Red-poll Warbler (*D. palmarum*).

* *Hist. N. Am. B.* i, pp. 269, 270.

Dendroica palmarum (Gmel.)

PALM WARBLER.

Popular synonyms. Wagtail Warbler; Titlark Warbler; Tip-up Warbler; Red-poll Warbler.

Motacilla palmarum GMEL. S. N. i, 1788, 951.
Sylvia palmarum LATH. et AUCT.
Sylvicola palmarum RICH. et AUCT.
Dendroica palmarum (part) BAIRD, B. N. Am. 1858, 288; Cat. N. Am. B. 1859, No. 208; Review, 1865, 207.—B. B. & R. Hist. N. Am. B. i, 1874, 273, pl. 14, fig. 8.
Dendrœca palmarum SCL.—COUES, Key, 1872, 104 (part); Check List, 1873, No. 90 (part); 2d ed. 1882, No. 132: B. N. W. 174, 67 (part); B. Col. Val. 1879, 284 (excl. syn. part).—RIDGW. Nom. N. Am. B. 1881, No. 113.
Sylvicola petechia SW. & RICH, F. B. A. ii, 1831, 215, pl. 41.—AUD. Synop. 1839, 58; B. Am. ii, 1841, 55, pl. 90.

HAB. Interior of eastern North America, north to Forts Simpson and Resolution, east to western base of the Alleghanies, west to the lower Missouri and eastern Texas; breeds chiefly north of the United States; winters in the Gulf States and Lower Mississippi Valley, and also in the Greater Antilles. Occasional in Atlantic States, where, however, as well as northward to Labrador, chiefly replaced by the much brighter colored form, *hypochrysea*.*

SP. CHAR. *Adult male in spring* (No. 83,024, U. S. Nat. Mus. Mount Carmel, Illinois, April 22, 1869.) Beneath yellowish white, tinged with yellow, the throat and crissum deepening into gamboge; sides of the neck, sides, and *entire breast*, streaked with umber-brown, tinged with rusty, the shafts of the feathers darker; a distinct superciliary stripe of clear yellow. Pileum uniform rich chestnut, darker next the bill, where divided medially by a short and indistinct streak of yellow. Upper parts in general olive-gray, deepening into yellowish olive-green on the upper tail-coverts. Tail-feathers dusky, edged externally with pale olive-yellowish, the two outer pairs with their inner webs broadly tipped with white. Wings dusky, the remiges edged like the tail-feathers, with yellowish olive-green; both rows of coverts tipped with pale grayish buff, forming rather distinct indications of two bands. Wing, 2.55; tail, 2.30; bill, from nostril, .30; tarsus, .80.

Most other males in the series before me are rather duller than the one described. A specimen from Carlisle, Penn. (No. 152, U. S. Nat. Mus., April 26, 1845, S. F. Baird,—presumably a male), differs merely in the more indistinct character of the streaks along the sides, those of the breast being almost obsolete. One of the brightest males in the entire series is a specimen in Mr. Nelson's collection (No. 2,072, Waukegan, Ill., April 12, 1876). This, however, is scarcely different from the one described, the only obvious difference being the somewhat brighter yellow on the breast, and the greater amount of chestnut in the streaks of the side of the breast. The palest male is also a Waukegan specimen (No. 2,073, mus. E. W. Nelson, April 28, 1876), which has the posterior half of the superciliary stripe white and the whole breast whitish, the pure yellow being thus restricted to the throat and crissum.

**Dendrœca palmarum hypochrysea* RIDGW. Bull. Nutt. Orn. Club, i, Nov. 1876, p. 85.

Adult female in spring (No. 83,027, U. S. Nat. Mus., Mount Carmel, Ill., spring; S. Turner). Similar to the male, as described above, but pileum mixed chestnut and dark umber-brown, *distinctly streaked* with dusky. Wing, 2.35; tail, 2.05; bill, from nostril, .28; tarsus, .71.

A female from Calumet, Ill. (No. 83,029, U. S. Nat. Mus., May 12, 1875; E. W. Nelson), is considerably paler and duller, the lower parts being whitish tinged with yellow on the throat and jugulum, only the crissum continuous yellow; even the superciliary stripe is white from the eye backward. The pileum is grayish olive, like the back, tinged in one or two places with chestnut, and very indistinctly streaked. The streaks on the sides are almost obsolete, but across the jugulum they are quite well defined.

Many females, however, are quite as brightly colored as the brightest males, the variation being chiefly individual and not sexual.

Adult (both sexes) in winter. Lower parts dirty whitish, the breast and sides with narrow streaks of grayish brown; *throat and superciliary stripe wholly dirty whitish; yellow entirely confined to the crissum*, except a tinge on the abdomen, and along the edge of the wing in some specimens; crown grayish umber, with but little, if any, tinge of chestnut, and distinctly streaked with dusky.

This plumage is that of all late fall and winter specimens, whether from far north or the West Indies. I have seen no specimens from the latter region in the spring plumage.

During the spring migration this is one of the most abundant of the Warblers, and for a brief season may be seen along the fences, or the borders of fields, usually near or on the ground, walking in a graceful, gliding manner, like an *Anthus* or *Seiurus*, the body tilting and the tail oscillating at each step. For this reason it is sometimes, and not inappropriately called Wag-tail Warbler. The species probably does not breed anywhere within the limits of the State, but goes far north to pass the summer. Mr. Kennicott found a nest at Fort Resolution, in Arctic America. It was on the ground, on a hummock, at the foot of a small spruce tree in a swamp. When discovered (June 18), it contained five young.

Dendroica discolor (Vieill.)

PRAIRIE WARBLER.

Popular synonym. Chestnut-backed Yellow Warbler.

Sylvia discolor VIEILL. Ois. Am. Sept. ii, 1807, 37, pl. 98.—NUTT. Man. i, 1832, 394 ("294" by error).—AUD. Orn. Biog. i, 1831, 76, pl. 14.

Sylvicola discolor JARD.—AUD. Synop. 1839, 62; B. Am. ii, 1841, 68, pl. 97.

Dendroica discolor BAIRD, B. N. Am. 1858, 290; Cat. N. Am. B. 1859, No. 210; Review, 1865, 213.—B. B. & R. Hist. N. Am. B. i, 1874, 276, pl. 14, fig. 9.

Dendræca discolor A. & E. Newton, Ibis, 1859, 144.—Coues, Key, 1872, 103; Check List, 1873, No. 86; 2d ed. 1882, No. 127; B. N. W. 1874, 63; B. Col. Val. 1878, 246.—Ridgw. Nom. N. Am. B. 1881, No. 114.

Sylvia minuta Wils. Am. Orn. iii, 1811, 87, pl. 85, fig. 4.

Hab. Eastern United States, north to Massachusetts and northern Illinois, west to Kansas: breeding nearly throughout its range, in suitable localities. Winters in Florida (and other Gulf States?) and in most of the West Indies.

"Sp. Char. *Spring male.* Above uniform olive-green, the interscapular region with chestnut-red centres to feathers. Under parts and sides of the head, including a broad superciliary line from the nostrils to a little behind the eye, bright yellow, brightest anteriorly. A well-defined narrow stripe from the commissure of the mouth through the eye, and another from the same point curving gently below it, also a series of streaks on each side of the body, extending from the throat to the flanks, black. Quills and tail-feathers brown, edged with white; the terminal half of the inner web of the first and second tail-feathers white. Two yellowish bands on the wings. *Female* similar, but duller. The dorsal streaks indistinct. Length, 4.86; wing, 2.25; tail, 2.10.

"First plumage of the young not seen.

"Autumnal specimens have the plumage more blended, but the markings not changed. A young male in autumnal dress is wholly brownish olive-green above, the whole wing uniform; the forehead ashy, the markings about the head rather obsolete, the chestnut spots on the back and the black ones on the sides nearly concealed." (*Hist. N. Am. B.*)

The so-called Prairie Warbler (and a less appropriate name has rarely been bestowed!), is one of the few species which appear to be more numerous eastward of the Alleghanies than to the westward of that range. It is abundant along the Atlantic coast, from Florida to Massachusetts, where it frequents open places, such as neglected fields and pastures, more or less grown up to bushes or young trees, its favorite haunts being localities where young cedars (*Juniperus virginiana*) are pretty thickly scattered about. Like all other warblers, it visits the orchards when the trees are in blossom, and it was in a blooming apple tree that the only specimen ever shot by the writer at Mount Carmel was killed.

The nest of this species is thus described by Dr. Brewer, in *History of North American Birds* (Vol. I., p. 278):

"Several nests of this Warbler have been obtained by Mr. Welch in Lynn. One was built on a wild rose, only a few feet from the ground. It is a snug, compact, and elaborately woven structure, having a height and a diameter of about two and a half inches. The cavity is two inches wide and one and a half deep. The materials of which the outer parts are woven are chiefly the soft inner bark of small shrubs, mingled with dry rose-leaves, bits of vegetables, wood, woody fibres, decayed stems of plants, spiders' webs,

etc. The whole is bound together like a web by cotton-like fibres of a vegetable origin. The upper rim of this nest is a marked feature, being a strongly interlaced weaving of vegetable roots and strips of bark. The lining of the nest is composed of fine vegetable fibres and a few horse-hairs. This nest, in its general mode of construction, resembles all that I have seen; only in others the materials vary—in some, dead and decayed leaves, in others, remains of old cocoons, and in others, the pappus of composite plants, being more prominent than the fine strips of bark. The nests are usually within four feet of the ground. The eggs vary from three to five, and even six."

Genus **SEIURUS** Swainson.

Seiurus Swainson, Zoöl. Jour. iii, 1827, 171. Type, *Motacilla aurocapilla* Linn.

"Gen. Char. Bill rather compressed, with a distinct notch. Gonys ascending. Rictal bristles very short. Wings moderate (about three quarters of an inch longer than the tail); first quill scarcely shorter than the second. Tail slightly rounded, feathers acuminate. Tarsi about as long as the skull, considerably exceeding the middle toe. Under tail-coverts reaching within about half an inch of the end of the tail. Color above olivaceous; beneath whitish, thickly streaked on the breast and sides; wings and tail immaculate. Nests on the ground, often arched or sheltered by position or dry leaves. Eggs white, marked with red, brown, and purple."

"This genus is decidedly sylvicoline in general appearance, although the spots on the breast resemble somewhat those of the Thrushes." (*Hist. N. Am. B.*)

Key to the Species.

A. Crown orange-rufous centrally, bordered on each side by a blackish stripe; no white superciliary stripe.

1. **S. aurocapillus.** Above brownish olive-green. *Young:* Above fulvous brown, with indistinct dusky shaft-streaks on the back; wing-coverts tipped with light fulvous, lower parts light fulvous, with dusky shaft-streaks, except on abdomen and crissum.

B. Crown uniform with the back, and bordered on each side by a distinct white superciliary stripe.

2. **S. motacilla.** Throat and crissum immaculate, or else the former only minutely speckled; lower parts creamy white, the flanks and crissum deeper buff; superciliary stripe white. Wing, 3.20–3.25; tail, 2.20–2.35; bill from nostril, .40–.45.

3. **S. noveboracensis.** Throat always more or less speckled, and crissum with distinct, though mostly concealed, streaks; lower parts pale sulphur-yellow, or yellowish white, not deeper on flanks or crissum; superciliary stripe light fulvous.

   α. *noveboracensis.* Wing, 3.–3.10; tail, 2.25–2.40; bill from nostril, .35–.38.

   β. *notabilis.* Wing, 3.05–3.25; tail, 2.25–2.50; bill from nostril, .40–.50.

Seiurus aurocapillus (Linn.)

OVEN BIRD.

Popular synonyms. Golden-crowned Thrush; Wood Wagtail; Land Kick-up (Jamaica); Golden-crowned Accentor.

Motacilla aurocapilla Linn. S. N. ed. 12, i, 1766, 334.

Turdus aurocapillus Lath.—Wils. Am. Orn. iii, 1810, 88, pl. 14, fig. 2.—Nutt. Man. i, 1832, 355; 2d ed. i, 1840, 404.—Aud. Orn. Biog. ii, 1834, 253; v, 1839, 447, pl. 143.

Seiurus aurocapillus Swains.—Sw. & Rich. F. B. A. ii, 1831, 227.—Aud. Synop. 1839, 93: B. Am. iii, 1841, 35, pl. 148.—Baird, B. N. Am. 1858, 260; Cat. N. Am. B. 1859, No. 186; Review, 1865, 214, 266.—Coues, Key, 1872, 105; Check List, 1873, No. 92; B. N. W. 1874, 70.—B. B. & R. Hist. N. Am. B. i, 1874, 280, pl. 14, fig. 11.

Siurus aurocapillus Moore.—Coues, B. Col. Val. 1878, 298; 2d Check List, 1882, No. 135.—Ridgw. Nom. N. Am. B. 1881. No. 115.

Hab. Eastern North America, north to Hudson's Bay Terr. and Alaska, west to Rocky Mountains, breeding nearly throughout its range. In winter, Florida, Bermudas, all of West Indies, Mexico (both coasts), and Central America, south at least to Costa Rica.

"Sp. Char. Above uniform olive-green, with a tinge of yellow. Crown with two narrow streaks of black from the bill enclosing a median and much broader one of brownish orange. Beneath white; the breast, sides of the body, and maxillary line, streaked with black. The female and young of the year are not appreciably different. Length, 6.00; wing, 3.00; tail, 2.40." (*Hist. N. Am. B.*)

First plumage. Remiges, rectrices, etc., as in the adult. Rest of upper parts dull fulvous-brown; *the crown without stripes;* all the feathers very indistinctly darker centrally; lower parts paler, more buffy, fulvous, growing gradually white toward the crissum, the buffy portions (breast and sides), with very fine indistinct streaks of dusky. (From a specimen obtained near Washington, D. C.)

The golden-crowned Thrush or Oven Bird is one of the most generally distributed and numerous birds of Eastern North America. It is almost certain to be found in any piece of woodland, if not too wet, and its frequently repeated song, which is not musical or otherwise particularly attractive, but very sharp, clear, and emphatic, is often, particularly during noonday in midsummer, the only bird-note to be heard. It lives much upon the ground, where it may be seen walking gracefully over the dead leaves or upon an old log, making occasional halts during which its body is tilted daintily up and down, much in the manner of the Water-thrushes (*S. motacilla* and *noveboracensis*), but more like the Kentucky Warbler, often to be seen in the same localities. Its ordinary note is a rather faint but sharp *chip*, prolonged into a chatter when one is chased by another. The usual song is very clear and penetrating, but not musical, and is well expressed by John Burroughs, in "Wake Robin," as sounding like the words "teacher, *teacher*, TEACHER, TEACHER, **TEACHER**!—the accent on the first syllable, and each word uttered with increased force and shrillness." But, as Mr. Burroughs truly says, "he has a far rarer song which

he reserves for some nymph whom he meets in the air. Mounting by easy flights to the top of the tallest tree, he launches into the air with a sort of suspended, hovering flight, and bursts into a perfect ecstacy of song—clear, ringing, copious, rivalling the Goldfinch's in vivacity, and the Linnet's in melody. This strain is one of the rarest bits of bird-melody to be heard. Over the woods, hid from view, the ecstatic singer warbles his finest strain. In the song you instantly detect his relationship to the Water Wagtail (*Seiurus noveboracensis*)—erroneously called Water Thrush—whose song is likewise a sudden burst, full and ringing, and with a tone of youthful joyousness in it, as if the bird had just had some unexpected good fortune. For nearly two years this strain of the pretty warbler was little more than a disembodied voice to me, and I was puzzled by it as Thoreau was by his mysterious Night-Warbler, which, by the way, I suspect was no new bird at all, but one he was otherwise familiar with. The little bird himself seems disposed to keep the matter a secret, and improves every opportunity to repeat before you his shrill, accelerating lay, as if this were quite enough, and all he laid claim to. Still, I trust I am betraying no confidence in making the matter public here. I think this is preëminently his love-song, as I hear it oftenest about the mating season. I have caught half-suppressed bursts of it from two males chasing each other with fearful speed through the forest."

According to Dr. Brewer (*Hist. N. Am. B.* Vol. I., p. 282), "the oven bird always nests on the ground, and generally constructs nests with arched or domed roofs, with an entrance on one side, like the mouth of an oven, and hence its common name. This arched covering is not, however, universal. For a site this species usually selects the wooded slope of a hill, and the nests are usually sunk in the ground. When placed under the shelter of a projecting root, or in a thick clump of bushes, the nest has no other cover than a few loose leaves resting on, but forming no part of it.

"A nest from Racine, Wis., obtained by Dr. Hoy, is a fine typical specimen of the domed nests of this species. The roof is very perfect, and the whole presents the appearance of two shallow nests united at the rim, and leaving only a small opening at one side. This nest was five inches in diameter from front to back, six inches from side to side, and four inches high. The opening was two and a quarter inches wide, one and three quarters high. The cavity was two inches deep below the brim. At the entrance the roof recedes about an inch, obviously to allow of a freer entrance and exit

from the nest. Externally this nest is made of wood-mosses, lichens, and dry leaves, with a few stems and broken fragments of plants. The entrance is strongly built of stout twigs, and its upper portion is composed of a strong framework of fine twigs, roots, stems, mosses, dry plants, etc., all firmly interwoven and lined with finer materials of the same."

Seiurus motacilla (Vieill.)

LOUISIANA WATER-THRUSH.

Popular synonyms. Large-billed Water-thrush; Water Wagtail; Wagtail.

Turdus motacilla VIEILL. Ois. Am. Sept. ii, 1807, 9, pl. 65.
Siurus motacilla COUES, Bull. Nutt. Orn. Club, ii, 1877, 33; B. Col. Val. 1878, 299; 2d Check List, 1882, No. 138.—RIDGW. Nom. N. Am. B. 1881, No. 117.
Turdus ludovicianus AUD. Orn. Biog. i, 1832, 99, pl. 19.
Seiurus ludovicianus BONAP.—BAIRD, B. N. Am. 1858, 262; ed. 1860, pl. 80, fig. 2; Cat. N. Am. B. 1859, No. 188; Review, 1865, 217.—COUES, Key, 1872, 106; Check List, 1873, No. 94; B. N. W. 1874, 72.—B. B. & R. Hist. N. Am. B. i, 1874, 287, pl. 14, fig. 13.

HAB. Eastern United States, north to Michigan and (rarely) Massachusetts, west to Kansas, Indian Territory and Texas; breeding north to Connecticut and lower Hudson River Valley, southern Michigan, etc., but chiefly west of the Alleghanies. Winters in eastern Mexico, Guatemala, and south to Veragua, also in Cuba and Jamaica.

"SP. CHAR. Bill longer than the skull. Upper parts olive-brown with a shade of greenish. A conspicuous white superciliary line from the bill to the nape, involving the upper lid, with a brown one from the bill through the eye, widening behind. Under parts white, with a very faint shade of pale buff behind, especially on the tail-covers. A dusky maxillary line; the forepart of breast and sides of body with arrow-shaped streaks of the same color. Chin, throat, belly, and under tail-coverts, usually immaculate. Length, 6.33, wing, 3.25; tail, 2.40; bill, from rictus, .75. Sexes similar. Young not seen.

"Autumnal specimens have a more or less strong wash of ochraceous over the flanks and crissum, and the brown above rather darker and less grayish than in spring birds.

"This species is very similar to *S. noveboracensis*, although readily distinguishable by the characters given in the diagnoses." (*Hist. N. Am. B.*)

The Large-billed or Louisiana Water-thrush, is an abundant bird in all swampy wooded locations throughout the State, although much less numerous in the extreme northern than in the more southern counties. From Mount Carmel southward it occasionally remains during mild winters, and even in cold and backward springs sometimes makes its appearance long before leaves and blossoms begin to unfold. Its favorite resorts are the borders of creeks and larger streams, and the margins of swamps or ponds in the woods, and it is always to be found in those places most frequented by the Prothonotary Warbler, nests of the two being some-

times placed within a few yards of one another. It is usually seen upon the wet ground or wading in the shallow water, its body in a horizontal position or even more elevated posteriorly, but continually tilting up and down, and when moving about it progresses by a graceful gliding walk. If it fancies itself observed, it runs slyly beneath the brush- or drift-wood overhanging the shore; and if alarmed, flies up suddenly with a sharp and startling chatter.

Audubon describes the song of this species as fully equal to that of the nightingale, its notes as powerful and mellow, and at times as varied. This may be true of the ecstatic love-song, heard on rare occasions, and uttered as the singer floats in perfect *abandon* of joy, with spread tail and fluttering wings; but it can hardly be true of the ordinary song, which, although rich, sweet, and penetrating, and almost startling in the first impressions it creates, is soon finished, and the pleasing effect somewhat transient.

It cannot be denied, however, that its song is one of the richest to be heard in our forests.

Seiurus noveboracensis (Gmel.)

WATER-THRUSH.

Popular synonyms. Small-billed Water-thrush; Water Wagtail; Water Kick-up; Bessy Kick-up and River Pink (Jamaica); Aquatic Accentor; New York Aquatic Thrush.

Motacilla nævia Bodd. Tabl. P. E. 1783, 47 (based on Pl. Enl. 752, fig. 1). (Not of p. 35!)
Siurus nævius Coues, Bull. Nutt. Orn. Club, ii, 1877, 32; B. Col. Val. 1878, 299; 2d Check List, 1882, No. 136.—Ridgw. Nom. N. Am. B. 1881, No. 116.
Motacilla noveboracensis Gmel. S. N. i, 1788, 958.
Turdus (Seiurus) noveboracensis Nutt. Man. i, 1832, 353.
Seiurus noveboracensis Bonap.—Aud. Synop. 1839, 93; B. Am. iii, 1841, 37, pl. 49 (part).—Baird, B. Am. 1858, 261; Cat. N. Am. B. 1859, No. 187; Review, 1865, 215.—Coues, Key, 1872, 106; Check List, 1873, No. 93; B. N. W. 1874, 71.—B. B. & R. Hist. N. Am. B. i, 1874, 283, pl. 14, fig. 12.
Turdus aquaticus Wils. Am. Orn. iii, 1811, 66, pl. 23, fig. 5.—Aud. Orn. Biog. v, 1839, 284, pl. 423, fig. 7.
Seiurus aquaticus Sw. & Rich. F. B. A. ii, 1831, 229, pl. 43.

Hab. Eastern North America, chiefly east of the Mississippi, north to the Arctic coast, breeding from northern border of United States northward. Winters in more southern United States, all of middle America (both coasts), northern South America, and all of West Indies. Accidental in Greenland.

"Sp. Char. Bill, from rictus, about the length of the skull. Above olive-brown, with a shade of green; beneath pale sulphur-yellow, brightest on the abdomen. Region about the base of the lower mandible, and a superciliary line from the base of the bill to the nape, brownish yellow. A dusky line from the bill through the eye; chin and throat finely spotted. All the remaining under parts and sides of the body, except the abdomen and including the under tail-coverts, conspicuously and thickly streaked with olivaceous brown, almost black on the breast. Length, 6.15; wing, 3.12; tail, 2.40. Bill, from rictus, .64. Sexes similar.

"A very young bird (22,619, Fort Simpson, August 10) is very different from the adult in coloration. The upper parts are fuliginous black, each feather with a broad terminal bar of pale ochraceous, wing-coverts tipped with the same, forming two distinct bands; streaks below as in the adult, but broader and less sharply defined." (*Hist N. Am. B.*)

The summer home of the Water-thrush is in the more northern portions of the continent, its breeding range embracing the whole of arctic and subarctic America, from the western portions of Alaska to the region about Hudson's Bay, and southward to the northern border of the United States. In Illinois the species is known as a migrant, passing slowly through in spring and fall, though in the extreme southern portion a few pass the winter, especially if the season be mild. At Mount Carmel it sometimes became common in the latter half of August, and in spring usually remained until after the Louisiana Water-thrush had begun nesting.

Seiurus noveboracensis notabilis (Grinnell)

GRINNELL'S WATER-THRUSH.

Popular synonym. Wyoming Water-thrush.

Siurus nœvius notabilis "Grinnell, MS." Ridgw. Proc. U. S. Nat. Mus. ii, March 27, 1880, 12; Nom. N. Am. B. 1881, No. 116*a*.—Coues, 2d Check List, 1882, No. 137.

Hab. Rocky Mountain district east, as a more or less common straggler, to Illinois and Indiana. Occasional on Pacific coast.

Sp. Char. Similar to *S. noveboracensis*, but larger, and much less brown above. Wing, 3.20–3.25; tail, 2.25–2.50; bill, from nostril, .40–.50; depth at base, .25; tarsus, .80–.90; middle toe, .55–.60. Above dark grayish brown, the feathers of the pileum with indistinctly darker centres. Beneath yellowish white, the throat thickly spotted, and the breast and sides heavily streaked with blackish dusky; a superciliary stripe of pale fulvous; a dusky stripe along upper edge of the auriculars. Lores crossed by a distinct streak of black. Centre of the abdomen immaculate; lower tail-coverts with central streaks of grayish dusky; lining of the wing smoky gray. Bill brownish black, the mandible growing lighter brown basally. Feet horn-color.

The plumage of the type specimen of this bird is in all respects, so far as I can see, quite identical with that of ordinary darker plumaged specimens of *S. noveboracensis*, such as occur more commonly west of the Alleghanies, except that the superciliary stripe does not extend so far back and the streaks on the breast are broader; the former character may be merely apparent, however, and owing to the "make-up" of the skin.

An adult male collected by G. H. Ragsdale, at Gainesville, Texas, Sept. 11, 1880, and consequently in autumnal plumage, differs conspicuously from fall specimens of typical *noveboracensis* in the much

purer white lower parts, which, though faintly tinged with pale buffy-yellow, are whiter even than in *S. motacilla*, but without a trace of the creamy tinge always observable in the latter, especially on the flanks and crissum. The upper parts are also decidedly less olive than in true *noveboracensis*. This example measures: Wing, 3.20; tail, 2.45; bill, from nostril, .42; tarsus, .90; middle toe, .55. The bill is quite appreciably stouter than in true *noveboracensis*. The superciliary stripe and suborbital spot are pale fawn-buff throughout.

A specimen from Tucson, Arizona (May 4, mus. W. Brewster), is similar in color to the type of *notabilis*, except that the streaks below are decidedly narrower, the spots on the throat much smaller, and the upper parts lighter and grayer. The tarsi are more slender, and the tail and bill much shorter. The measurements are as follows: Wing, 3.20; tail, 2.25; culmen, .52; bill, from nostril, .40; tarsus, .80; middle toe, .60.

Examples collected by me in Richland and Wabash counties, Illinois, and in Knox county, Indiana (near Wheatland), are very typical of this race.

Genus **GEOTHLYPIS** Cabanis.

We follow the ruling of the Committee of the American Ornithologists' Union on Classification and Nomenclature in uniting under one heading the current genera *Geothlypis* and *Oporornis*, the differential characters of which are expressed in the analytical table on page 115. Under its own heading will be found a fuller diagnosis of each subgenus, and a key to the species.

Subgenus **Oporornis** Baird.

Oporornis Baird, Birds N. Am. 1858, 246. Type, *Sylvia agilis* Wils.

"Gen. Char. Bill sylvicoline, rather compressed; distinctly notched at tip; rictal bristles very much reduced. Wings elongated, pointed, much longer than the tail; the first quill nearly or quite the longest. Tail very slightly rounded; tail feathers acuminate, pointed; the under coverts reaching to within less than half an inch of their tip. Tarsi elongated, longer than the head; claws large, the hinder one as long as its digit, and longer than the lateral toes. Above olive-green; beneath yellow; tail and wings immaculate. Legs yellow.

"This group of American Warblers is very distinct from any other. The typical species is quite similar in color to *Geothlypis philadelphia*, but is at once to be distinguished by much longer

wings, more even tail, and larger toes and claws. It is also very similar to *Seiurus*, differing chiefly in the longer wings, larger claws, and absence of spots beneath." (*Hist. N. Am. B.*)

COMMON CHARACTERS. Above plain olive-green, beneath plain yellow (except on throat and jugulum, in *O. agilis* alone).

1. **O. agilis.** *Adult male:* Head, neck and jugulum ash-gray, lighter on the throat and tinged with olive on the crown; a distinct white orbital ring. *Adult female:* Throat and jugulum light smoky gray, upper head and nape olive, like the back, and yellow of lower parts paler and duller. *Young in first autumn:* Similar to the female, but throat and jugulum still duller and more or less tinged with dull yellowish.
2. **O. formosa.** *Adult male:* Crown black, the feathers tipped with ash-gray; lores and triangular patch on auriculars black; broad superciliary stripe, spot on lower eyelid, and entire lower parts rich yellow. *Adult female:* Similar to the male, but rather duller. *Young:* Like the adult female, but still duller, the black patches concealed or replaced by dusky smoky olive.

Geothlypis agilis (Wils.)

CONNECTICUT WARBLER.

Popular synonym. Gray-headed Warbler.

Sylvia agilis WILS. Am. Orn. v, 1812, 64, pl. 39, fig. 4.—AUD. Orn. Biog. ii, 1834, 227, pl. 138.
Trichas agilis NUTT. Man. 2d ed. i, 1840, 463.
Sylvicola agilis JARD.—AUD. Synop. 1839, 63; B. Am. ii, 1841, 71, pl. 99.
Oporornis agilis BAIRD, B. N. Am. 1858, 246; ed. 1860, pl. 79, fig. 2; Cat. N. Am. B, 1859, No. 174; Review, 1865, 218.—COUES, Key, 1872, 106; Check List, 1873, No. 95; 2d ed. 1882, No. 139; B. Col. Val. 1878, 308.—B. B. & R. Hist. N. Am. B. i, 1874, 290, pl. 15, figs. 1, 2.—RIDGW. Nom. N. Am. B. 1881, No. 118.
Trichas tephrocotis NUTT. Man. 2d ed. i, 1840, 462.

HAB. Eastern United States and British Provinces, migrating northward in spring chiefly through the Mississippi Valley, and returning southward in autumn through the Atlantic States. Winter residence unknown, but probably in Gulf States, there being no extralimital record. Breeds in Manitoba, and probably elsewhere in the interior of British America.

"SP. CHAR. *Spring male.* Upper parts and sides of the body uniform olive-green, very slightly tinged with ash on the crown. Sides of the head ash, tinged with dusky beneath the eye. (Entire head sometimes ash.) Chin and throat grayish ash, gradually becoming darker to the upper part of the breast, where it becomes tinged with dark ash. Sides of the neck, breast, and body, olive, like the back; rest of under parts light yellow. A broad continuous white ring round the eye. Wings and tail feathers olive (especially the latter), without any trace of bars or spots. Bill brown above. Feet yellow. Length, 6 inches; wing, 3.00; tail, 2.25. *Female.* The olive green reaching to the bill, and covering sides of head; throat and jugulum pale ashy buff. *Young* not seen. Nestling unknown.

"Autumnal specimens nearly uniform olive above; the throat tinged with brownish so as to obscure the ash.

"A specimen in the collection of the Philadelphia Academy, killed by Mr. Krider, has the darker ash of the jugulum of a decided sooty tinge.

"A peculiarity in the history of this species is shown in the fact that it is quite abundant in Illinois, Wisconsin, etc., in the spring,

and very rare in the autumn; precisely the reverse being the case near the Atlantic border, where only two or three spring specimens have been announced as captured by collectors. It is possible that they go north in spring, along the valley of the Mississippi, and return in autumn through the Atlantic States." (*Hist. N. Am. B.*)

The Connecticut Warbler is a common species during the migrations, but is almost wholly confined to bushy swamps or their vicinity, and therefore easily overlooked. When found in the woods in the vicinity of swamps it usually seeks refuge in the latter if pursued. Mr. Nelson gives us the following information pertaining to this species as observed by him in the northeastern corner of the State* :—

"A rather common migrant; May 15th to 27th, and September 1st to October 1st. The species occurs in about equal numbers in spring and fall. Near Waukegan, the last of May, 1876, these birds were found frequenting a dense swampy thicket on the border of a wood, in company with *Geothlypis philadelphia* and two species of *Seiurus*. They kept close to the ground and were quite difficult to shoot, as they would dart into the thicket upon the slightest alarm. Their habits in this locality were so nearly like those of *G. philadelphia*, that, until actually in hand, it was not an easy matter to distinguish them. While confined to the house by illness, the 26th and 27th of May, Mr. Jencks had the pleasure of becoming still better acquainted with their habits. His attention was first drawn to them by hearing a loud ringing song entirely new to him. Going to the door he saw the author of the song, upon one of the lower branches of a small pine tree close to the house. The specimen was soon in his possession and proved to be this species. Afterwards, during this and the following day, he heard the song repeatedly, and obtained other specimens of the bird. Their note he describes as being a trifle harsh, but pleasant to the ear. It is delivered with force, in a clear ringing manner, slightly resembling that of *G. trichas*. Their habits and movements while about the pine trees—within twenty yards of the house—closely resembled those of *S. aurocapillus*, with which they were associated."

Until very recently, the nest and eggs of this species, or even the portion of country where it bred, were unknown. All the information that we have in the matter is from Mr. Ernest E. T. Seton, of Carberry, Manitoba, in the *Auk*, for April, 1884, pages 192 and 193, to which the reader is referred.

* See pages 100 and 101 of his "List of the Birds of Northeastern Illinois."

Geothlypis formosa (Wils.)

KENTUCKY WARBLER.

Sylvia formosa WILS. Am. Orn. iii, 1811, 85, pl. 25, fig. 3.—AUD. Orn. Biog. i, 1831, 196, pl. 38.—NUTT. Man. i, 1832, 399.

Myiodioctes formosa AUD. Synop. 1839, 50; B. Am. ii, 1841, 19, pl. 74.

Oporornis formosus BAIRD, B. N. Am. 1858, 247; Cat. N. Am. B. 1859, No. 175; Review, 1865, 218.—COUES, Key, 1872, 106; Check List, 1873, No. 96; 2d ed. 1882, No. 140; B. N. W. 1874, 73; B. Col. Val. 1878, 309.—B. B. & R. Hist. N. Am. B. i, 1874, 293, pl. 15, fig. 3.—RIDGW. Nom. N. Am. B. 1881, No. 119.

HAB. Eastern United States, chiefly west to the Alleghanies; north to Connecticut Valley, southern New York, Michigan, and Wisconsin; west to Kansas, Indian Territory, Texas, etc.; breeds throughout its United States range. Winters in Mexico and Central America, south to Panama; Cuba.

"SP. CHAR. *Adult male.* Upper parts and sides dark olive-green. Crown and sides of the head, including a triangular patch from behind the eye down the side of the neck, black, the feathers of the crown narrowly lunulated at tips with dark ash. A line from nostrils over the eye and encircling it (except anteriorly), with the entire under parts, bright yellow. No white on the tail. *Female* similar, with less black on the head. Length, 5 inches; wing, 2.95; tail, 2.25.

"The adults in autumn are exactly the same as in spring." (*Hist. N. Am. B.*)

First plumage. Remiges, rectrices, primary coverts, and alulæ as in the adult. Pileum and back dull raw-umber brown, tinged with rusty on the back and scapulars; throat, jugulum, breast, and sides pale grayish fulvous, the abdomen and crissum paler and slightly tinged with yellow. *No markings of any sort about the head.*

The beautiful Kentucky Warbler is one of the most abundant of birds in the rich woods of southern Illinois. As far north as Wabash, Lawrence, and Richland counties, it is even more abundant than the Golden-crowned Thrush, though the two usually inhabit different locations, the latter preferring, as a rule, the dryer upland woods, while the present species is most abundant in the rich woods of the bottom-lands. In its manners it is almost a counterpart of the Golden-crowned Thrush, but is altogether a more conspicuous bird, both on account of its brilliant plumage and the fact that it is more active, the males being, during the breeding season, very pugnacious, and continually chasing one another about the woods. It lives altogether near the ground; making its artfully concealed nest among the low herbage and feeding in the undergrowth, the male uttering his pretty song from some old log or low bush. His song recalls that of the Cardinal, but is much weaker; and the ordinary note is a soft *pchip*, somewhat like the common call of the Pewee (*Sayornis phœbe.*) Considering its great abundance, the nest of this species is extraordinarily difficult to find; at least this has been the writer's experience, and he has come to the conclusion that

the female must slyly leave the nest at the approach of the intruder and run beneath the herbage until a considerable distance from the nest, when joined by her mate, the pair by their evident anxiety mislead the collector as to its location. However this may be, the writer has never found a nest of this species except by accident, although he has repeatedly searched every square foot of ground within a radius of many yards of the spot where a pair showed most uneasiness at his presence.

Subgenus **Geothlypis** Cabanis.

Geothlypis Cabanis, Wiegmann's Archiv, 1847, i, 316,349.—Id. Schomburgk's Reise, Guiana, 1848.

"Gen. Char. Bill sylvicoline, rather depressed, and distinctly notched; rictal bristles very short or wanting. Wings short, rounded, scarcely longer than the tail; the first quill shorter than the fourth. Tail long; much rounded or graduated. Legs stout; tarsi elongated, as long as the head. Olive-green above, belly yellow. Tail-feathers immaculate. Legs yellow." (*Hist. N. Am. B.*)

Common Characters. Above plain olive-greenish, beneath plain yellowish (except on throat and jugulum, in *G. philadelphia* and its western representative, *G. macgillivrayi*.

1. **G. trichas.** *Adult male:* Forehead, lores, and auriculars black, bordered behind by light ash-gray or grayish white, (sometimes tinged with yellowish); lower parts bright yellow, the abdomen usually dull whitish. *Adult female:* Forehead and auriculars olive-brown, like rest of upper parts, the former usually tinged with reddish brown; no gray or whitish on head, and lower parts less distinctly yellow. *Young, first plumage:* Above uniform olive-brown, beneath deep buff, or light ochraceous.
2. **G. philadelphia.** *Adult male:* Head and neck plumbeous, with more or less of a black patch on the jugulum; eyelids blackish. *Adult female:* Head smoky gray, tinged with olive; the throat pale yellowish gray; eyelids, and an indistinct postocular bar dull whitish or pale dingy yellowish.*

Geothlypis trichas (Linn.)

A. trichas.—MARYLAND YELLOW-THROAT.

Popular synonyms. Black-masked Ground Warbler; Black-cheeked Yellow-throat; Black-spectacled Warbler; Brier Wren; Yellow Brier Wren.

Turdus trichas Linn. S. N. ed. 12, i, 1766, 299.

Sylvia trichas Lath.—Nutt. Man. i, 1832, 401.—Aud. Orn. Biog. i, 1832, 120; v, 1839, 463, pl. 23.

Geothlypis trichas Caban. M. H. i, 1850, 16.—Baird, B. N. Am. 1858, 241; Cat. N. Am. B. 1859, No. 170; Review, 1865, 220.—Coues, Key, 1872, 167; Check List, 1873, No. 97; 2d ed. 1882, No. 141; B. N. W. 1874, 74; B. Col. Val. 1878, 309.—B. B. & R. Hist. N. Am. B. i, 1874, 297, pl. 15, figs. 7, 8.—Ridgw. Nom. N. Am. B. 1881, No. 122.

* The western representative of this species, *G. macgillivrayi*, is very similar, but differs in proportions, the tail being decidedly longer. The male is without a solid black patch on the jugulum, and the eyelids are distinctly white, in very marked contrast with the velvety-black lores.

Sylvia marylandica WILS. Am. Orn. i, 1808, 88, pl. 6, fig. 1; ii, 1809, 163, pl. 18, fig. 4.
Trichas marylandica NUTT. Man. ed. 2, i, 1840, 453.—AUD. Synop. 1839, 65; B. Am. ii, 1841, 78, pl. 102.
Sylvia roscoe AUD. Orn. Biog. i, 1832, 124, pl. 24.
Trichas roscoe NUTT. Man. 2d ed. i, 1840, 457.

B. occidentalis.—WESTERN YELLOW-THROAT.

Popular synonyms. (Same as for the Eastern form.)
Geothlypis trichas AUCT.—(Western references.)
Geothlypis trichas occidentalis BREWST. Bull. Nutt. Orn. Club, viii, July, 1883, p. 159.

HAB. The true *G. trichas* chiefly east of the Alleghanies, or at least east of the lowland portions of the Mississippi Valley. *G. trichas occidentalis* from the Mississippi Valley to the Pacific Coast.

SP. CHAR. *Adult male.* Above olive-green, becoming browner on the nape. Forehead, lores, orbits, auriculars, and malar region deep black; this bordered posteriorly by light ash-gray or grayish white. Chin, throat, jugulum, and breast, rich gamboge-yellow. Abdomen, sides and flanks, dull yellowish white in true *G. trichas*, yellow in *occidentalis*. *Adult female.* Much duller in color than the male, without black, gray, or white on head, which is mostly dull brownish, the pileum or auriculars, or both, sometimes tinged with reddish. Yellow of throat, etc., much duller than in the male. *Young, first plumage.* Somewhat like the adult female, but still duller in color. Lower parts dull olivaceous, anteriorly, tinged with yellow on throat, the posterior portions pale dull buff. *Young, in first fall.* Lower parts entirely light dull buff.
Wing (of male), 2.00–2.40; tail, 1.80–2.40.

We have not formally separated the two races indicated in the above synonymy and description, for the reason that at present we are not sure of their exact limits. *Occidentalis* is evidently the prevailing form in Illinois and Indiana, much the larger number of specimens having the larger size and more extensively yellow lower parts of the western form. Still there is much variation in this latter character, and it may be that both forms occur.

This merry little denizen of the briar-patches is one of the most conspicuous members of the family to which he belongs, being both abundant and familiar, and furthermore decked with such a marked plumage that he cannot fail to attract notice. The broad, velvety black spectacles contrast handsomely with the bright yellow of his throat and the whitish line above them, giving him a very wise look, as he peers at one through the briars or weed-stalks; and his pretty song of *witchity—witchity'—witchity*, uttered from the top of a rose bush or among the brambles, is to be heard throughout the day. Its nest is usually built between upright weed-stalks or coarse grass- or sedge-stems, in the damper portions of a meadow, and is deeply cup-shaped, the opening being at the top. The eggs vary in number from four to six, and before being blown are of a delicate pinkish white, the larger end marked by a ring of specks and "pen-lines" of different shades of brown.

Geothlypis philadelphia (Wils.)

MOURNING WARBLER.

Popular synonym. Black-throated Ground Warbler.

Sylvia philadelphia Wils. Am. Orn. ii, 1810, 101, pl. 14, fig. 6.—Nutt. Man. i, 1832, 404.—Aud. Orn. Biog. v, 1839, 78.

Trichas philadelphia Jard.—Aud. Synop. 1839, 65; B. Am. ii, 1841, 76, pl. 101.—Nutt. Man. 2d ed. i, 1840, 459.

Geothlypis philadelphia Baird, B. N. Am. 1858, 243; ed. 1860, pl. 79, fig. 3; Cat. N. Am. B. 1859, No. 172; Review, 1865, 226.—Coues, Key, 1872, 107; Check List, 1873, No. 98; 2d ed. 1882, No. 142; B. N. W. 1874, 75; B. Col. Val. 1878, 313.—B. B. & R. Hist. N. Am. B. i, 1874, 301, pl. 15, fig. 6.—Ridgw. Nom. N. Am. B. 1881, No. 120.

Hab. Eastern North America, breeding from northern United States (New England to Minnesota and eastern Dakota), northward; more rare in Atlantic States. Winters in southeastern Mexico and Costa Rica, and thence south to Colombia (no Guatemalan or West Indian record). Casual in Greenland.

"Sp. Char. Wings but little longer than the tail, reaching but little beyond its base. *Adult male.* Head and neck all round, with throat and forepart of breast, ash-gray, paler beneath. The feathers of the chin, throat, and fore breast in reality black, but with narrow ashy margins more or less concealing the black, except on the breast. Lores and region round the eye dusky, without any trace of a pale ring. Upper parts and sides of the body clear olive-green; the under parts bright yellow. Tail-feathers uniform olive; first primary, with the outer half of the outer web nearly white. *Female* with the gray of the crown glossed with olive; the chin and throat paler centrally, and tinged with fulvous; a dull whitish ring round the eye. Length, 5.50; wing, 2.45; tail, 2.25.

"Specimens vary in the amount of black on the jugulum, and the purity of the ash of the throat. The species is often confounded with *Oporornis agilis*, to which the resemblance is quite close. They may, however, be distinguished by the much longer and more pointed wings, and more even tail, shorter legs, etc., of *agilis*. The white ring round the eye in the female *philadelphia* increases the difficulty of separation.

"The adult male in autumn is scarcely different from the spring bird, there being merely a faint olive-tinge to the ash on top of the head, and the black jugular patch more restricted, being more concealed by the ashy borders to the feathers; the yellow beneath somewhat deeper." (*Hist. N. Am. B.*)

In the Bulletin of the *Nuttall Ornithological Club* (Cambridge, Mass., April, 1878, p. 61) Mr. Brewster gives the following description of the immature stages of this species, taken from examples in his unrivaled collection of eastern birds:

"*First plumage. Female.* Remiges, rectrices, etc., as in adult. Rest of upper parts, with wing-coverts and sides of head, dull reddish brown, becoming almost cinnamon on the back, and tinged strongly with ashy on the pileum. Entire under parts light reddish brown, most pronounced on the abdominal and anal regions, becoming lighter on the throat, and darker, with a strong olive suffusion, on the breast and sides. No appreciable

maxillary or supra-orbital stripes. (From a specimen in my collection shot at Upton, Me., August 11, 1876. This bird was very young; in fact barely able to fly. A slight doubt exists in my mind as to its identity, for I did not actually see the parent birds feed it, though both were in the immediate vicinity and exhibited much solicitude. This specimen is separable from the corresponding stage of *G. trichas* by the ashy cast of the pileum and the absence of brownish on the sides.)

"*Autumnal plumage. Young male.* Entire upper parts olive-green, the feathers of the pileum and nape being just tipped with this color and showing plainly the ashy underneath when disarranged. Sides of head, with broad bands extending down each side of the throat and nearly meeting across the jugulum, ash, washed with greenish olive. Sides, with a broad connected band across anal region and breast, dull olive-green. Rest of under parts, with central areas of throat and jugulum, very clear rich yellow, intensifying into a spot of orange on the breast. In two specimens (both males) a yellow tipping of the feathers on the jugulum nearly conceals much black underneath, which becomes conspicuous when the plumage is slightly disarranged.

"*Autumnal plumage. Young female.* Similar to the male, but with a more olive cast to the green of the dorsal aspect, less ashy on head, and the spot on the breast of richer, deeper color, and broader diffusion. The young of both sexes in autumnal plumage have the upper and lower eye-lids *conspicuous fulvous yellow.* In one specimen (male, taken August 21) the eye-lids are *dirty white.* (From seven specimens—two females, five males—in my collection, shot at Upton, Me., August, 1874.) Irrespective of generic characters, the young of *G. philadelphia* are at once distinguishable from those of *Oporornis agilis* in corresponding stages by the total absence of ashy on the central regions of the throat, jugulum, and breast. So marked is the difference that obtains in this respect, that I am easily able to separate the two species, when lying side by side, at a distance of fifteen or twenty feet."

During the spring migration, I have found this bird to be very common, on one or two occasions; and I have also obtained specimens in the fall. Early in May, 1881, they were abundant near Wheatland, Indiana, most of them being observed about brush-piles in a clearing and along fences in the immediate vicinity. In the early part of June, 1871, I saw a pair in a thicket along the border of Fox Prairie in Richland county, and presumed at the time that they were breeding there, but the individuals in question may have been merely late migrants.

Genus ICTERIA Vieillot.

Icteria Vieillot, Ois. Am. Sept. 1, 1807, iii, 85. Type, *Muscicapa viridis* Gmel. = *Turdus virens* Linn.

"Gen. Char. Bill broad at base, but contracting rapidly and becoming attenuated when viewed from above; high at the base (higher than broad opposite the nostrils); the culmen and commissure much curved from base, the gonys straight. Upper jaw deeper than the lower; bill without notch or rictal bristles. Nostrils circular, edged above with membrane, the feathers close to their borders. Wings shorter than tail, considerably rounded; first quill rather shorter than the sixth. Tail moderately graduated; the feathers rounded but narrow. Middle toe without claw, about two-thirds the length of tarsus, which has the scutellæ fused externally in part into one plate.

"The precise systematic position of the genus *Icteria* is a matter of much contrariety of opinion among ornithologists; but we have little hesitation in including it among the *Sylvicolidæ*. It has been most frequently assigned to the *Vireonidæ*, but differs essentially in the deeply cleft inner toe (not half united as in *Vireo*), the partially booted tarsi, the lengthened middle toe, the slightly curved claws, the entire absence of notch or hook in the bill, and the short, rounded wing with only nine primaries. The wing of *Vireo*, when much rounded, has ten primaries,—nine only being met with when the wing is very long and pointed.

"Of this genus only one species is known, although two races are recognized by naturalists, differing in the length of the tail." (*Hist. N. Am. B.*)

Icteria virens (Linn.)

YELLOW-BREASTED CHAT.

Popular synonym. Yellow Mockingbird.

Turdus virens Linn. S. N. ed. 10, i, 1758, 171.

Icteria virens Baird, Review, 1865, 228.—Coues, Key, 1872, 108; Check List, 1873, No. 100; 2d ed. 1882, No. 144; B. N. W. 1874, 77; B. Col. Val. 1878, 320.—B. B. & R. Hist. N. Am. B. i, 1874, 307, pl. 15, fig. 12.—Ridgw. Nom. N. Am. B. 1881, No. 123.

Muscicapa viridis Gmel. S. N. i, 1788, 936.

Icteria viridis Bonap.—Nutt. Man. i, 1832, 299; 2d ed. i, 1840, 339.—Aud. Orn. Biog. ii, 1834, 223; v, 1839, 433, pl. 137; B. Am. iv, 1842, 160, pl. 244.—Baird, B. N. Am. 1858, 248; Cat. N. Am. B. 1859, No. 176.

Pipra polyglotta Wils. Am. Orn. i, 1808, 90, pl. 6, fig. 1.

Hab. Eastern United States, north to the Connecticut Valley and Great Lakes; west to the border of the Great Plains; winters in Eastern Mexico and Guatemala.

"Sp. Char. Third and fourth quills longest; second and fifth little shorter; first nearly equal to the sixth. Tail graduated. Upper parts uniform olive-green; under parts, including the inside of wing, gamboge-yellow as far as nearly half-way from the point of the bill to the tip of the tail; rest of under parts white, tinged with brown on the sides; the outer side of the tibiæ plumbeous; a slight tinge of orange across the breast. Forehead and sides of the head ash, the lores and region below the eye blackish. A white stripe from the nostrils over the eye and involving the upper eyelid; a patch on the lower lid, and a short stripe from the side of the lower mandible, and running to a point opposite the hinder border of the eye, white. Bill black; feet brown. *Female* like the male, but smaller; the markings indistinct; the lower mandible not pure black. Length, 7.40; wing, 3.25; tail, 3.30. Nest in thickets, near the ground. Eggs white, spotted with reddish."

"Both sexes in winter apparently have the base of lower mandible light-colored, the olive more brown, the sides and crissum with a strong ochraceous tinge." It is this plumage that has been recognized as *I. velasquezi*.

First plumage. Remiges, rectrices, etc., as in the adult. Head superiorly and laterally, uniform grayish olive, with a barely appreciable whitish supraloral line and orbital ring, and *without black markings.* Whole throat pale ash-gray (almost white on the chin), stained laterally and anteriorly with yellow; entire breast gamboge-yellow, obscured with olivaceous gray across the jugulum (probably entire gray at at first, the yellow feathers being probably the beginning of the first moult). Abdomen white; flanks and crissum pale buff.

In most parts of Illinois the Yellow-breasted Chat is an abundant bird in suitable localities. These consist of the borders of thickets, briar-patches, or wherever there is a low, dense growth of bushes—the thornier and more impenetrable the better. Probably none of our birds except the Mockingbird itself possess a greater variety of notes than this loquacious species, on which account it is not unfrequently known as the "Yellow Mockingbird." All its notes appear to be original, however, although some of them suggest very strongly those of other creatures. Thus, one of them resembles closely the barking of a pup; another, the mewing of a cat; and a third, the whistling sound produced by a duck's wings when flying, only much louder. This last is the sound most frequently heard, and may be recognized at a distance of a quarter of a mile, or more, the other notes being interludes between repetitions of the whistling song. The latter can be very perfectly imitated by a good whistler, and the bird thereby brought instantly to the spot, where he dodges in and out among the bushes, uttering constantly, if the whistling be repeated, a deep-toned, emphatic *tac*, or hollow, resonant *meow*. During the height of the breeding season the male becomes exceedingly animated and tuneful, ascending, by short flights and jumps, from branch to branch, to the top of a small tree, singing vociferously all the while—and then launching into the air, dangling its legs and flirting his tail, descends, by odd jerks, to the thicket.

The notes of this species are heard regularly during moonlight nights, throughout the breeding season.

The nest is built in a thicket, usually in a thorny bush or thick vine. It is bulky, composed exteriorly of dry leaves, strips of loose grape-vine bark and similar materials, and lined with fine grasses and fibrous roots. The eggs are three to five in number, glossy white, thickly spotted with various shades of rich, reddish brown and lilac.

The species appears to be rather rare in the extreme northern portion of the State; but Mr. Douglas informs me that he has taken its eggs a few miles north of Waukegan, while Mr. Coale records in his notes one specimen from Chicago.

Mr. Nelson says that the Yellow-breasted Chat is a "a regular but not common summer resident" in Cook county, arriving May 1 to 10, and departing the last of August.

Genus **SYLVANIA** Nuttall.

Sylvania Nutt. Man. Land B. 1832,290. Type by elimination *Muscicapa selbii* Aud.,= *Motacilla mitrata* Gmel.

Wilsonia Bonap. Geog. and Comp. List, 1838,23. Same type.

Myiodioctes Aud. Synop. 1839,48. Same type.

"Gen. Char. Bill broad, depressed; the lateral outlines a little concave; the bristles reaching down not quite half-way from nostrils to tip. Culmen and commissure nearly straight to near the tip. Nostrils oval, with membrane above. Wings pointed, rather longer than the nearly even but slightly rounded tail; first quill shorter than the fourth, much longer than the fifth; the second and third quills longest. Tarsi rather lengthened the scutellar divisions rather indistinct; the middle toe without claw, about three fifths the tarsus.

"This genus is distinguished from *Setophaga* mainly by stouter feet and longer toes; shorter and more even tail, narrower bill, etc. The species are decidedly muscicapine in general appearance, as shown by the depressed bill with bristly rictus. The type, *M. mitratus*, is very similar in character of bill to *Dendroica castanea*, but the wings are much shorter; the tail longer and more graduated; the legs and hind toe longer, and the first primary shorter than the fourth (.15 of an inch less than the longest), not almost equal to the longest. The species are plain olive or plumbeous above, and yellow beneath. They may be grouped as follows:" (*Hist. N. Am. B.*)

A Inner webs of tail-feathers with white patches.

1. **S. mitrata.** Above plain olive-green, beneath pure yellow. *Adult male:* Head, neck, and jugulum deep black, the forehead and auriculars gamboge-yellow. *Adult female:* Black head-markings of the male usually merely indicated, sometimes absent, and rarely so extensive or deeply black as in that sex. *Young:* No black whatever about the head.
2. **S. microcephala.** Above olive-green, beneath pale yellowish; wing with two white bands.

B Inner webs of tail-feathers without any white markings:

3. **S. pusilla.** Above plain olive-green, beneath continuous yellow. *Adult male:* Crown with a patch of glossy blue-black. *Adult female:* Similar to the male, but black crown-patch usually less distinct, sometimes nearly obsolete. *Young:* No trace of black on crown; otherwise, like the adult female.
4. **S. canadensis.** Above plumbeous gray, beneath yellow, the crissum white; a yellow orbital ring. *Adult male:* Forehead, crown and jugulum, spotted with black. *Adult female:* Similar to the male, but black spots of head, etc., much less distinct. *Young in first autumn:* Similar to the adult female, but black markings wanting; those of the jugulum, however, indicated by deltoid or cuneate streaks of olive-grayish or dusky; yellow supraloral bar obsolete.

Sylvania mitrata (GMEL.)

HOODED WARBLER.

Popular synonyms. Black-headed Warbler; Hooded Flycatching Warbler; Mitred Warbler; Selby's Warbler.

Motacilla mitrata GMEL. S. N. i, 1788, 977.
Sylvia mitrata LATH.—NUTT. Man. i, 1832, 373.—AUD. Orn. Biog. ii, 1834, 68, pl. 60.
Wilsonia mitrata, BP. Comp. List. 1838, 23.—RIDGW. Proc. U. S. Nat. Mus. 1880, 173, No. 124.
Sylvania mitrata NUTT. Man. 2d ed. i, 1840, 333.
Myiodioctes mitratus AUD. Synop. 1839, 48; B. Am. ii, 1841, 12, pl. 71 ("*mitrata*").—BAIRD, B. N. Am. 1858, 292; Cat. N. Am. B. 1859, No. 211; Review, 1865, 239.—COUES, Key, 1872, 109; Check List 1873, No. 101; 2d ed. 1882, No. 146; B. N. W. 1874, 78; B. Col. Val. 1878, 324.—B. B. & R. Hist. N. Am. B. i, 1874, 314, pl. 15, figs. 10, 11.—RIDGW. Nom. N. Am. B. 1881, No. 124.
Sylvia cucullata WILS. Am. Orn. iii, 1811, 101, pl. 26, fig. 3.
Muscicapa selbyii AUD. Orn. Biog. i, 1831, 46, pl. 9.
Muscicapa selbii NUTT. Man. i, 1832, 296.

HAB. Eastern United States, north to Connecticut and Hudson River Valleys, western New York, and Michigan; breeding throughout its summer range; casual to Massachusetts; west to Kansas. Winters in Cuba, Jamaica, eastern Mexico, and Central America, south to Panama; Bermudas.

"SP. CHAR. *Male.* Bill black; feet pale yellow. Head and neck all round and forepart of the broast black. A broad patch on the forehead extending round on the entire cheeks and ear-coverts, with the under parts bright yellow. Upper parts and sides of the body olive-green. Greater portion of inner web of outer three tail-feathers white.

"*Female* similar, but without the black; the crown like the back*; the forehead yellowish; the sides of the head yellow, tinged with olive on the lores and ear-coverts. Throat bright yellow.

"Length, 5.00; wing, 2.75; tail, 2.55. (Skin.)" (*Hist. N. Am. B.*)

"Mr. C. Hart Merriam, in his late "Review of the Birds of Connecticut" (pp. 25 and 29), rectifies an error in the recent descriptions of the females of this species. I wish to add my testimony to his conclusions, "that the female bird, like the male, is several years—at least three—in attaining its full plumage; and that the two sexes, when fully adult, can only be distinguished by the fact that, in the female, the throat, though strongly tinged with black, is never *pure black* as in the male." Long ago I discovered these facts, as the bird is an abundantly breeding summer resident here, where I have taken several of their nests in a single walk. With a large series of specimens before me, I can fully endorse Mr. Merriam's views. The females of the second summer are entirely without any black upon the head, and I have frequently found them sitting upon their eggs in this condition. Males of the same age show very evident traces of black. Only in extreme examples does

* See, however, Mr. Mearns's note. given below.

the black on the hood and throat of the female approach the purity of those parts in the male." (E. A. MEARNS, in *Bull. Nutt. Orn. Club*, ii, pp. 72, 72.)

In all rich damp woods, both in Illinois and Indiana, I have found the beautiful Hooded Warbler a more or less common species. In the woods of Knox and Gibson counties, Indiana, immediately opposite Mount Carmel, it is particularly abundant, so much so, in fact, as to be one of the most characteristic species.

Sylvania pusilla (Wils.)

WILSON'S WARBLER.

Popular synonyms. Green Black-capped Flycatcher or Flycatching Warbler; Wilson's Black-cap; Black-capped Yellow Warbler.

Muscicapa pusilla WILS. Am. Orn. iii, 1811, 103.
Wilsonia pusilla BONAP. Comp. List, 1838, 23.—RIDGW. Proc. U. S. Nat. Mus. 1880, 173, No. 125.
Sylvania pusilla NUTT. Man. 2d ed. i, 1840, 335.
Myiodioctes pusillus SCL.—BAIRD, B. N. Am. 1858, 293; Cat. N. Am. B. 1859, No. 213; Review, 1865, 240.—COUES, Key, 1872, 109; Check List, 1873, No. 102; 2d ed. 1882, No. 147; B. N. W. 1874, 79, 232; B. Col. Val. 1878, 326.—B. B. & R. Hist. N. Am. B. i, 1874, 317, pl. 16, figs. 3, 4.—RIDGW. Nom. N. Am. B. 1881, i, No. 125.
Sylvia wilsonii BONAP. Jour. Phil. Ac. iv, 1824, 179.—NUTT. Man. i, 1832, 438.
Muscicapa wilsonii AUD. Orn. Biog. ii, 1834, 148, pl. 124.
Myiodioctes wilsonii AUD. Synop. 1839, 50; B. Am. ii, 1841, 23, pl. 75.

HAB. All of North America except Pacific coast, where replaced by a brighter colored (and otherwise different) race, var. *pileolata**; breeding from extreme northern border of United States (?) northward to Hudson's Bay and Alaska, where reaching to the coast of Bering's Sea, and across to eastern Siberia. Winters in eastern Mexico, Guatemala, and south to Chiriqui.

SP. CHAR. Forehead, line over and around the eye, and under parts generally, bright yellow. Upper parts olive-green; a square patch on the crown lustrous black. Sides of body and cheeks tinged with olive. No white on wings or tail. Female similar, the black of the crown duller, or sometimes replaced by olive-green. Length, 4.75; wing, 2.25; tail, 2.30.

This little bird is found in Illinois only during its migrations, and, like other species, varies greatly in numbers in different years, being scarcely to be found some seasons and abundant at others. It is, however, an inconspicuous species, and may readily pass unnoticed. Its summer home is in the colder regions of the far North, where it breeds from Labrador to Alaska, and north to the limit of tree growth.

*See *Hist. N. Am. B.* i, p. 319.

Sylvania canadensis (Linn.)

CANADIAN WARBLER.

Popular synonyms. Canada Flycatcher; Necklaced Warbler; Bonaparte's Warbler; Canadian Flycatching Warbler.

Muscicapa canadensis LINN. S. N. ed. 12, i, 1766, 327.—WILS. Am. Orn. iii, 1811, 100, pl. 26, fig. 2.—AUD. Orn. Biog. ii, 1834, 17, pl. 103.

Myiodioctes canadensis AUD. Synop. 1839, 49; B. Am. ii, 1841, 14, pl. 72.—BAIRD, B. N. Am. 1858, 294; Cat. N. Am. B. 1859, No. 214; Review, 1865, 239.—COUES, Key, 1872, 109; Check List, 1873, No. 103; 2d ed. 1882, No. 149; B. N. W. 1874, 80; B. Col. Val. 1878, 323.—B. B. & R. Hist. N. Am. B. i, 1874, 320, pl. 16, fig. 6.—RIDGW. Nom. N. Am. B. 1881, No. 127.

Sylvia pardalina BONAP. Jour. Phil. Ac. iv, 1824, 179.—NUTT. Man. i, 1832, 372.

Muscicapa bonapartii AUD. Orn. Biog. ii, 1831, 27, pl. 5 (= young).

Setophaga bonapartii SW. & RICH. F. B. A. ii, 1831, 225, pl. 47.

Myiodioctes bonapartii AUD. Synop. 1839, 49; B. Am. ii, 1841, 17, pl. 73.—BAIRD, B. N. Am. 1858, 295; Cat. N. Am. B. 1859, No. 215.

Sylvania bonapartii NUTT. Man. 2d ed. i, 1840, 332.

HAB. Eastern North America, breeding from northern border of United States (including higher portion of Middle States), northward. Winters in Mexico, Central America, and northern South America to Ecuador.

"SP. CHAR. Upper part bluish ash; a ring around the eye, with a line running to the nostrils, and the whole under part (except the tail-coverts, which are white), bright yellow. Centres of the feathers in the anterior half of the crown, the cheeks, continuous with a line on the side of the neck to the breast, and a series of spots across the forepart of the breast, black. Tail-feathers unspotted. *Female* similar, with the black of the head and breast less distinct. In the *young* obsolete. Length, 5.34; wing, 2.67; tail, 2.50." (*Hist. N. Am. B.*)

"*First plumage. Female.* Remiges, rectrices, etc., similar to the adults. Rest of the upper parts, including wing-coverts and sides of head, uniform deep dull cinnamon; the greater coverts tipped with fulvous. Throat, breast, and sides very light cinnamon, tinged with olive. Anal and abdominal regions pale sulphur-yellow. No conspicuous spots, stripes, or markings anywhere. (From a specimen in my collection shot at Upton, Me., August 4, 1874. This bird was so young as to be scarcely able to fly, and with the rest of the brood, was attended by the female parent.)

"*Adult in autumn. Male.* Similar to adult in spring, but with the yellow of the under parts much more intense, and the black spotting on the breast slightly clouded by the yellow tipping of the overlapping feathers. (From a specimen in my collection shot at Upton, Me., August 29, 1874.)

"*Young in autumn. Male.* Pileum and back greenish olive; nape and rump bluish ash, slightly tinged with olive. Centres of a *few feathers* on the forehead and cheeks, with a continuous line along the side of the neck to the breast, dusky-black. A broad band of very small spots (each one not more than one quarter of the size of those exhibited in the adult plumage) across the upper part of the breast black. Otherwise similar to the adult." (BREWSTER, *Bull. Nutt. Orn. Club*, Apr. 1878, pp. 60, 61.)

This handsome species is rather a common migrant, being in fact, sometimes one of the most abundant members of the family. It has not yet been detected as a summer resident of any part of our State, but, since it is said to breed "in New York and Massachusetts, and in the region north of latitude 42°" (BREWER), it very likely does so in the extreme northern portion of Illinois.

The fully adult male is a very handsome and conspicuous bird, though far less so than his relative, the Hooded Warbler; and his song is one of the prettiest that we know of, having some resemblance to that of the Water-thrush.

"In Vermont," says Mr. Charles S. Paine*, "the Canada Fly-catcher is a common summer visitant, and is first seen about the 18th of May. They do not spread themselves over the woods, like most of our small fly-catching birds, but keep near the borders, where there is a low growth of bushes, and where they may be heard throughout the day, singing their regular chant. A few pairs may occasionally be found in the same neighborhood. At other times only a single pair can be found in quite a wide extent of territory of similar character. They build their nests, as well as I can judge, about the first of June, as the young are hatched out and on the wing about the last of that month, or the first of July. I have never found a nest, but I think they are built on the ground. They are silent after the first of July, and are rarely to be seen after that period."

Nests found at Lynn, Mass., by Mr. Geo. O. Welch, were built in tussocks of meadow-grass, in swampy woods or logs; they were constructed of pine needles, strips of loose grape-vine bark, dry leaves, etc., and lined with fibrous dry roots. The eggs were five in number, clear white, marked with a wreath of spots of various shades of rich brown, purple, and violet.

Genus **SETOPHAGA** Swainson.

Setophaga Swainson, Zoöl. Jour. iii, Dec. 1827, 360. Type, *Muscicapa rutacilla* Linn.

"Gen. Char. Bill much depressed, the lateral outlines straight toward tip. Bristles reach half-way from nostril to tip. Culmen almost straight to near the tip; commissure very slightly curved. Nostrils oval, with membrane above them. Wings rather longer than tail, pointed; second, third, and fourth quills nearly equal; first intermediate between fourth and fifth. Tail rather long, rather rounded; the feathers broad, and widening at ends, the outer web narrow. Tarsi with scutellar divisions indistinct externally. Legs slender; toes short, inner cleft nearly to base of first joint, outer with first joint adherent; middle toe without claw, not quite half the tarsus." (*Hist. N. Am. B.*)

Setophaga ruticilla (Linn.)

AMERICAN REDSTART.

Popular synonyms. Black-and-red Warbler; Fan-tail Warbler, or Flycatcher; Yellow-tailed Warbler or Flycatcher.

Motacilla ruticilla Linn. S. N. ed. 10, i, 1758, 186.

Muscicapa ruticilla Linn. S. N. ed. 12, i, 1766, 326.—Wils. Am. Orn. i, 1808, 103, pl. 6, fig. 6; v, 119, pl. 45, fig. 2.—Aud. Orn. Biog. i, 1831, 202; v, 1839, 428, pl. 40; Synop. 1839, 44; B. Am. i, 1840, 240, pl. 68.

* In *Hist. N. Am. B.* i, pp. 320, 321.

Muscicapa (*Sylvania*) *ruticilla* NUTT. Man. i, 1832. 291.

Setophaga ruticilla SW.—BAIRD, B. N. Am. 1858, 297; Cat. N. Am. B. 1859, No. 217; Review, 1865. 256.—COUES, Key, 1872 110; Check List, 1873, No. 104; 2d ed. 1882, No. 152; B. N. W. 1874, 81, 232; B. Col. Val. 1878, 337.—B. B. & R. Hist. N. Am. B. i, 1874. 322. pl. 16, figs. 1, 5.—RIDGW. Nom. N. Am. B. 1881, No. 128.

HAB. Eastern North America, west regularly to and including the Rocky Mountains, to the borders of the Great Basin, straggling to the Pacific coast; breeds throughout its summer range, which extends from the Gulf States north to Ft. Simpson and Hudson's Bay. Winters in West Indies, Mexico, Central America, and northern South America, to Ecuador.

"SP. CHAR. *Male.* Prevailing color black. A central line on the breast, the abdomen and under tail-coverts white; some feathers in the latter strongly tinged with dark brown. Bases of all the quills except the inner and outer, and basal half of all the tail-feathers except the middle ones, a patch on each side of the breast, and the axillary region, orange-red, of a vermilion shade on the breast. *Female* with the black replaced by olive-green above, by brownish white beneath, the red replaced by yellow; the head tinged with ash; a grayish white lore and ring round the eye. Length 5.25; wing, 2.50; tail, 2.45.

"The young male in early autumn greatly resembles in plumage the adult female, but has the upper tail-coverts and tail deep black, sharply contrasted with the olive of the rump, instead of having the upper tail-coverts olive, the tail simply dusky; in addition the back is more greenish olive, and the abdomen and crissum pure white. The male does not obtain the perfect adult plumage until about the third year." (*Hist. N. Am. B.*)

Although so very abundant as to be, like the Red-eyed Vireo, a nuisance to the collector who has to shoot his warblers at random in the tall tree-tops, the Redstart is by no means a well known bird to the general observer. This arises from the fact that it inhabits almost exclusively thick woodlands, where it usually keeps well up in the trees. None of the numerous family of warblers are more active than the present species, which is continually on the move, darting first this way, then that after insects, which it snaps up in the air in the manner of a true flycatcher. At all times the long, broad tail is spread out like a fan, showing, in the female, a broad pale yellow band—her only ornament—and in the male enhancing the striking appearance caused by his handsome black and salmon-red livery. Its notes, particularly the song, bear a rather close resemblance to those of the Summer Yellowbird, but are weaker and less attractive. The nest is a compact, cup-shaped structure, usually placed on a horizontal branch, but supported by upright twigs, at heights varying from eight or ten to fifty feet from the ground. Its material consists of vegetable fibres, etc., closely interwoven, and lined with softer materials. The eggs are usually four in number, and very similar in color and markings to those of the Summer Yellowbird.

Family VIREONIDÆ.—The Vireos.

"The essential features of this family appear to consist in the combination of the dentirostral bill, notched in both mandibles; the ten primaries (except *Vireosylvia*), of which the outer is usually from one fourth to one half the second; the rather short, nearly even tail, with narrow feathers, and the great amount of adhesion of the anterior toes,—the whole basal joint of the middle being generally united on both sides to the adjacent joints, and decidedly shorter than the basal of inner or two basal of outer. The outer lateral toe is generally appreciably longer than the inner, reaching considerably beyond the base of the middle claw. The tarsi are always distinctly scutellate anteriorly. The young are never spotted, or streaked as in the Thrushes; nor, indeed, do the adults exhibit such markings.

"The *Vireonidæ* are peculiar to the New World, and are widely distributed, although but one genus belongs to the United States." (*Hist. N. Am. B.*)

Genus VIREO Vieillot.

Vireo Vieill, Ois. Am. Sept. 1, 1807, 83. Type, *Muscicapa noveboracensis* Gmel.

"No great violence will be done by considering all the American Vireos as belonging to one genus, divisible into three subgenera, as, however different the extremes of the series may be from each other, the gradation is quite complete.

"The North American species take a wide range during their southern winter migration, only paralleled in this respect by the *Sylvicolidæ;* they do not visit the West Indies, save as very rare stragglers to Cuba (*V. olivaceus, solitarius, flavifrons,* and *noveboracensis*). They all have a melodious song, and, so far as known,

make a deep nest, suspended by its upper edge between the forks of a horizontal twig. The eggs are white, generally with a few reddish or brown blotches.

"Quite a number are characterized by having the eyes white, red, or yellow." (*Hist. N. Am. B.*)

Analysis of Subgenera.

Vireosylva. Bill compressed, narrow; culmen and commissure straight, the tip abruptly curved (or, if this is not the case, there is no trace of light bands on the wing; see section "*b*"). Superciliary stripe continued back to the occiput. No trace of light bands on the wing. No conspicuous ring round the eye.

Lanivireo. Bill compressed, stout; culmen arched from the base, commissure curved. Superciliary stripe stopping at posterior angle of the eye and curving under it, enclosing the eye in a conspicuous orbital ring, interrupted only in front. Two conspicuous white bands on the wing.

Vireo. Bill stout, scarcely compressed, sub-cylindrical. First primary not spurious or, if so, not acute.

Subgenus **Vireosylva** Bonaparte.

Vireosylva Bonap. Comp. List, 1838, 26. Type, *Muscicapa olivacea* Linn.

Subgen. Char. "Wings long and pointed, one third or one fourth longer than the nearly even or slightly rounded tail. First quill very small (less than one third the second), sometimes apparently wanting. Second quill longer than the seventh, much longer than the secondaries. Tarsi short (scarcely extending .60 of an inch); toes rather long. Body slender and elongated. Bill slender, narrow, straight; the culmen straight for its basal half, the commissure quite straight; light horn-color, paler beneath. Feet weak." (*Hist. N. Am. B.*)

Common Characters. Above plain olive, without distinct wing markings, the pileum more grayish, contrasting more or less strongly with the color of the back; a more or less distinct superciliary stripe of whitish, and beneath it a rather indistinct dusky streak before and behind the eye. Lower parts whitish, the crissum and axillars, and sometimes flanks, yellowish.

A. First primary rudimentary, usually concealed.*

* In very rare instances *V. olivacea* has a well-developed spurious primary, as witness the following, by Mr. Batchelder, in the "Nuttall Bulletin," vol. ii, pp. 97, 98: "On September 3, 1877, at Bar Harbor, Me., I shot a Red-eyed Vireo (*Vireo olivaceus*) which is curiously abnormal in having well-developed spurious first primaries, which measure 1.16 inches in length, the wing measuring 3.15 inches. Through the kindness of Mr. J. A. Allen, I have examined the Vireos of this species in the collection of the Museum of Comparative Zoölogy, and find in a series of about seventy specimens four more cases of the same variation. They are as follows: No. 23,281 (Coll. M. C. Z., from Coalburgh, W. Va.) with spurious primaries on both wings, measuring 1.17 inches (wing 2.23); No. 23,274 (Coll. M. C. Z., same locality), with a spurious primary only on the left wing, measuring 1.10 inches (wing 2.92.) No. 4,185 (Coll. M. C. Z., from Newtonville, Mass.), with spurious primaries on both wings, measuring 1.09 inches (wing 3.02); and No. 4,793 (Coll. M. C. Z., same locality), with a spurious primary on the left wing, measuring 1.15 inches, the wing measuring 3.21. It may be well to say that they are not the first primary coverts, but are true spurious primaries, lying in the same plane as the other primaries, and differing from the spurious primaries of other species of this family only in being somewhat smaller. This variation seems particularly interesting from the fact that the presence or absence of a spurious primary has been to some extent taken as a basis of classification in this family."

a. Pileum bordered along each side by a dusky line. Wing more than 3 inches.

1. **V. olivacea.** Above olive-green, the pileum slate-gray; beneath white medially the sides olive-greenish; crissum scarcely tinged with yellow; inner edges of quills white.

2. **V. flavoviridis.*** Above yellowish olive-green, the pileum ash-gray; beneath white medially, bright greenish olive-yellow laterally, the crissum, lining of wings, and inner edges of quills light yellow.

b. Pileum without dusky border; wing less than three inches.

3. **V. philadelphica.** Above grayish green the pileum gray; beneath sulphur-yellow, more whitish on the chin and abdomen.

B. First primary well developed, and exposed (.50 of an inch, or more, long). Wing less than 3 inches.

4. **V. gilva.** Above olive-gray, the crown not conspicuously different; beneath whitish, the sides tinged with dull buffy.

α gilva. Wing, 2.65–2.90; tail, 2.20–2.50; bill from nostril, .30–.35. Eastern United States.

β swainsoni. Wing, 2.70–3.00; tail, 2.20–2.60; bill from nostril, .25–.28. Bill more depressed, and colors grayer, with less of a buffy cast on sides, etc. Western United States.

Vireo olivaceus (Linn.)

RED-EYED VIREO.

Popular synonyms. Red-eyed Greenlet; Red-eyed Flycatcher.

Muscicapa olivacea Linn. S. N. ed. 12, i, 1766, 327 (part).—Wils. Am. Orn. ii, 1810, 55, pl. 10, fig. 3.

Vireo olivaceous Vieill.—Nutt. Man. i, 1832, 312.—Aud. Orn. Biog. ii, 1834, 287, pl. 150; Synop. 1839, 162; B. Am. iv, 1842, 155, pl. 243.—Baird, B. N. Am. 1858, 331; Cat. N. Am. B. 1859, No. 240.—Coues, Key, 1872, 120; Check List, 1873, No. 122; 2d ed. 1882, No. 170; B. N. W. 1874, 96; B. Col. Val. 1878, 495.

Vireosylva olivacea Bp.—*Vireosylvia olivacea* Baird, Review, 1866, 333.—B. B. & R. Hist. N. Am. B. i, 1874, 363, pl. 17, fig. 2.

Hab. Eastern North America, north to "Fur Countries;" west to Rocky Mountains, or even beyond, especially along northern border of United States; winters from Florida and Cuba to Trinidad and Colombia, but not in West Indies, except Cuba; accidental in Greenland and even in England.

"Sp. Char. (No. 1,418 male, Carlisle, Penn., May, 1844.) Upper parts olive-green. Top of head, from bill to nape, ash-color. A white line from nostrils above and beyond the eye, bordered above by a dusky line forming the edge of the ashy cap, and below by a similar, perhaps paler, loral and post-ocular cheek-stripe. Beneath, including tibiæ, white, with perhaps a tinge of olivaceous ash across the breast; the sides of the neck like the back; sides of the body with a faint wash of olive. Axillars and crissum faintly

* This is a Central American and Mexican species, reaching its normal northern limit in the lower Rio Grande valley in Texas. It has been taken, however, on the Canadian shore of the Lower St. Lawrence, and may possibly occur as a straggler in Illinois.

tinged with sulphur-yellow; lining of wings and its edge, the latter especially, nearly white. Quills blackish brown, edged externally, except at ends of primaries, with olive; internally with white. Tail-feathers lighter brown, edged externally like the back, internally with pale olivaceous white. Bill dusky above, pale below; tarsi plumbeous; iris red. Length, 6.33; extent of wings, 10.25; wing, 3.33; tail, 2.50.

'*Female* similar, but duller in plumage." (*Hist. N. Am. B.*)

Taking the country at large, the Red-eyed Vireo is perhaps the most abundant woodland species. It is the *bête noir* of the collector, who, during the "warbler season" daily, and much to his disgust, sacrifices a greater or less number of individuals; indeed it is a common saying that a "a Red-eyed Vireo can make himself look and act like any sort of warbler." It is probable that we have not a more beneficial bird than this species, noxious and destructive insects of numerous kinds constituting his principal food. Seeking for these is his constant occupation, as he hops along a branch, now peering into some crevice of the bark or nook among the foliage, even uttering his pretty song during the interval between swallowing the last worm and finding the next. "The tender and pathetic utterances of this Vireo, uttered with so much apparent animation, to judge from their sound, are in striking contrast to the apparent indifference or unconsciousness of the little vocalist who, while thus delighting the ear of the listener, seems to be all the while bent on procuring its daily supply of food, which it pursues with unabated ardor. (BREWER.)

"This Vireo," says Dr. Brewer,* "builds the pensile nest of its race, suspending it from the fork of two or more twigs of a forest tree, at various heights of from five to fifty feet from the ground. It is cup-like in shape, and always dependent from small twigs, around which its upper edges are firmly bound. Externally it is woven of various materials, fine strips of bark, the hempen fibres of vegetables, and webs of spiders and various caterpillars. These are compactly pressed and woven, and, as some suppose, agglutinated by the saliva of the builder. Sometimes the unmanageable materials give to the outside of the nest a rude and unfinished appearance, at others they are evenly and smoothly wrought. They are very strong, uninjured by the storms of winter, and are often made use of by other birds, by mice, and even by the same bird a second season."

* *Hist. N. Am. B.* i, p. 365.

Vireo philadelphicus (Cass.)

PHILADELPHIA VIREO.

Popular synonyms. Philadelphia Greenlet; Brotherly-love Vireo.

Vireosylvia philadelphica CASS. Proc. Phil. Ac. 1851,153, pl. 10, fig. 2.—BAIRD, Review, 1866, 340.—B. B. & R. Hist. N. Am. B. i, 1874, 367, pl. 17, fig. 4.—RIDGW. Nom. N. Am. B. 1882, No. 138.

Vireo philadelphicus BAIRD, B. N. Am. 1858, 335; ed. 1860, pl. 78, fig. 3; Cat. N. Am. B. 1859, No. 244.—COUES, Key, 1872, 120; Check List, 1873, No. 124; 2d ed. 1882, No. 173; B. N. W. 1874, 97; B. Col. Val. 1878, 492.

HAB. Eastern North America, chiefly west of the Alleghanies, north to "Fur Countries;" breeding chiefly north of the United States, and wintering in Central America (Guatemala to Costa Rica). Not recorded from Mexico or West Indies.

"SP. CHAR. (No. 20,643 male.) Above dark olive-green, tinged with plumbeous ash, except on the rump; top of head and nape purer plumbeous ash, not edged with dusky, the line of demarcation indistinct. Beneath ight sulphur-yellow, paler and almost white on chin and middle of abdomen; sides more olivaceous. A whitish stripe from bill over eye, as also a patch beneath it and the eyelids. A dusky loral and post-ocular spot. Quills and rectrices brown, edged externally with olive, internally with whitish; the larger coverts with paler outer edges. Bill blackish, paler plumbeous below. Legs plumbeous. Spurious outer or first quill (seen in *gilvus*) wanting; the outer about equal to fifth; third longest; second and fourth not much shorter. Total length, 4.80; wing, 2.65; tail, 2.25.

"Specimens vary somewhat in purity of tints, and especially in intensity of yellow of under parts, which color is deeper in autumnal skins." (*Hist. N. Am. B.*)

The Philadelphia Vireo is a common, or in some seasons abundant, migrant, but owing to its plain colors may very easily be overlooked, or mistaken for some species of warbler. It is probable that this species breeds in the northern portion of the State; at least this probability is strongly suggested by the following statement, quoted from Mr. Nelson's list (pp. 102, 103):

"A common migrant; May 15th and 25th, and September 5th to 25th. While passing in the spring these birds frequent either willow thickets or high woods. They were so numerous near Waukegan about the 20th of May, 1876, that a dozen specimens might have been obtained in an hour. The first of July, 1874, I found two pairs of these birds in a dense willow thicket bordering Mazon Creek, about sizty miles south of Chicago. Upon my approach the birds showed great anxiety, uttering a short complaining cry, and coming within a few feet of me. That they had young in the

vicinity I was sure, but owing to the character of the covert they were not found. Specimens of this species may invariably—as far as my experience goes—be separated from those of *V. gilvus* by the greater intensity of yellow on the former, as well as by the quill characters."

Vireo gilvus (Vieill.)

WARBLING VIREO.

Popular synonyms. Warbling Greenlet, or Flycatcher.

Muscicapa gilva VIEILL. Ois. Am. Sept. i, 1807, 65, pl. 34.

Vireo gilvus BP.—NUTT. Man. i, 1832, 309.—AUD. Orn. Biog. ii, 1834, 114, pl. 118; Synop. 1839, 161; B. Am. iv, 1842, 149, pl. 241.—BAIRD, B. N. Am. 1858, 335; Cat. N. Am. B. 1859, No. 245.—COUES, Key, 1872, 120; Check List, 1873, No. 125; 2d ed. 1882, No. 174; B. N. W. 1874, 97; B. Col. Val. 1878, 501.

Vireosylvia gilva CASS.—BAIRD, Review, 1866, 342.—B. B. & R. Hist. N. Am. B. i, 1874, 368, pl. 17, fig. 3.—RIDGW. Nom. N. Am. B. 1881, No. 139.

Muscicapa melodia WILS. Am. Orn. v, 1812, 85, pl. 42, fig. 3.

HAB. Eastern North America, north to Fort Garry; winter habitat unknown, but probably Gulf States, there being no extra-limital record. In the Western United States replaced by a slightly grayer, smaller-billed race, the *V. swansoni* of BAIRD (B. N. Am. 1858, 336, in text), of identical habits.

"SP. CHAR. (No. 1,017 female.) Above olive-green, strongly glossed with ashy, the head and nape above more distinctly ashy, but without decided line of demarcation behind, and without dusky edge; rump pure olive. Stripe from nostrils over eye to nape, eyelids, and space below eye, creamy white. A rather dusky postocular and loral spot, the latter not extending to the bill. Under parts white, with tinge of greenish yellow (occasionally of creamy fulvous or buff), especially on breast; sides more olivaceous. Crissum and axillars scarcely more yellowish. Quills and rectrices wood-brown, edged internally with whitish, externally with olivaceous, except perhaps on longer primaries. Edge of wing white. Larger wing-coverts grayish brown, with paler edges, and no trace of olivaceous. Bill horn-color above, paler below.

"First quill very short or spurious; second about equal to, generally rather longer than, sixth; third longest; fourth, then fifth a little shorter.

"Fresh specimen: Total length, 5.33; expanse of wings, 8.35; wing from carpal joint, 2.85. Prepared specimen: Total length, 4.80; wing, 2.75; tail, 2.25. Sexes alike. Iris brown."

This charming little bird is abundant in all cultivated portions of the country, and even where the population is sparse and the forests extensive, it is more or less common along the margins of streams and edges of the woods. It is particularly numerous among the large silver-maples and associate trees which droop their graceful foliage over the banks of the larger streams, while in all towns having abundance of shade trees along the streets it is one of the commoner and more familiar species.

The Warbling Vireo was a special favorite of Dr. Thomas M. Brewer, who gives the following pleasing account of it in *History of North American Birds* (Vol. I., p. 369):

"This Vireo, more than any other of its genus, if not exclusively, is to a large extent a resident of villages, towns, and even cities. It is by far the sweetest singer that ventures within their crowded streets and public squares,—although Mr. Cassin gives his preference to the notes of the Red-eyed,—and the melody of its song is exquisitely soft and beautiful. It is chiefly to be found among the tall trees, in the vicinity of dwellings, where it seems to delight to stay, and from their highest tops to suspend its pensile nest. It is especially abundant among the elms of Boston Common, where at almost any hour of the day, from early in the month of May until long after summer has gone, may be heard the prolonged notes of this, one of the sweetest and most constant of our singers. Its voice is not powerful, but its melody is flute-like and tender. Throughout the last of May, and in June and July, their charming song may be heard amid the din of the city, from earliest dawn till nightfall, and rarely ceases even in the noontide heat, when all other birds are silent. It is ever in motion, while thus singing; and its sweetest notes are given forth as it moves among the tree-tops in search of insects. It is not only one of our most constant singers, but it remains musical almost until its departure for the South in October."

To our mind, the song of this species is characterized more by its air of happy contentment than by any other special quality, and we have never heard one whose song sounded at all "flute-like;" yet it is, withal a very pretty and agreeable performance.

Subgenus **Lanivireo** Baird.

Lanivireo Baird, B. N. Am. 1858, 329 (s. g.); Review, May 21, 1866, 326, 345. Type, *Vireo flavifrons* Vieill.

"Subgen. Char. Body stout, head broad. Bill short and stout, broad at the base, the culmen curved from the base, the commissure considerably arched. Bill blue-black. Feet stout. Type, *V. flavifrons*." (*Hist. N. Am. B.*)

This genus includes a group of two species, one of which is exclusively eastern, while the other extends entirely across the continent, though differentiated into several strongly marked races in separate parts of its habitat. The two species occurring in the Atlantic Province may be distinguished as follows:

Common Characters. Orbital ring and supraloral streak, yellow or white; two broad white bands across wing. Upper parts olive-greenish, the wings and tail bluish.

1. **L. flavifrons.** Anterior half olive-green above, pale lemon-yellow below; posterior half plumbeous above, white below. First primary rudimentary, concealed.
2. **L. solitarius.** Head plumbeous, with white orbital ring and supraloral streak; lower parts pure white, the sides yellowish olive, and crissum tinged with sulphur-yellow.

Vireo flavifrons (Vieill.)

YELLOW-THROATED VIREO.

Popular synonym. Yellow-throated Greenlet.

Vireo flavifrons VIEILL. Ois. Am. Sept. i, 1807, 85, pl. 54.—NUTT. Man. i, 1832, 302.—AUD. Orn. Biog. ii, 1834. 119, pl. 119; Synop. 1839. 160; B. Am. iv, 1842. 141, pl. 238.—BAIRD, B. N. Am. 1858, 341; Cat. N. Am. B. 1859, No. 252.—COUES, Key, 1872. 121; Check List, 1873, No. 126; 2d ed. 1882, No. 176.—B. N. W. 1874, 99; B. Col. Val. 1878, 493.

Vireosylvia flavifrons BAIRD, Review, 1866, 346 (s. g. *Lanivireo*).

Lanivireo flavifrons LAWR. 1868.—B. B. & R. Hist. N. Am. B. i, 1874, 379, pl. 17, fig. 3.—RIDGW. Nom. N. Am. B. 1881, No. 140.

Muscicapa sylvicola WILS. Am. Orn. i, 1808, 117, pl. 7, fig. 3.

HAB. Eastern North America, north to Canada, west to edge of Great Plains; breeding nearly throughout its range, and wintering in Florida, Cuba, eastern Mexico, and Central America to Colombia.

"SP. CHAR. (No. 28 390.) Head and neck above and on sides, with interscapular region, bright olive-green. Lower back, rump, tail, and wing-coverts ashy. Wings brown with two white bands across the coverts, the outer edges of inner secondaries, and inner edges of all the quills, with inside of wing white. Outer primaries edged with gray, the inner with olive. Tail-feathers brown, entirely encircled by a narrow edge of white. Under parts to middle of body, a line from nostrils over eye, eyelids, and patch beneath the eye (bordered behind by the olive of neck) bright gamboge-yellow; rest of under parts white, the flanks faintly glossed with ashy. Lores dusky. Bill and legs plumbeous black.

"No spurious primary evident; second quill longest; first a little shorter than third.

"Length, 5.80; wing, 3.00; tail, 2.00; difference of longest and innermost quills, .90; tarsus, .73.

"Autumnal birds, perhaps more especially the young, are more glossed with olivaceous, which invades the ashy portions, and tinges the white." (*Hist. N. Am. B.*)

In some respects the Yellow-throated Vireo is the most remarkable of all the species of the family which occur within the United States. It is decidedly the finest songster of all those which reach the Northern States, has the loudest notes of admonition and reproof, and is the handsomest in plumage. So far as the writer's experience with it is concerned, he has found it only in the woods, and mostly in the luxuriant forests of the bottom-lands, where it may be regarded as the most abundant species of its family. This experience accords with that of Audubon and Wilson; but the habits of birds vary greatly with locality, and in other portions of the country, notably in New England, it is said to be a very familiar species, delighting in the companionship of man.

Vireo solitarius (Wils.)

BLUE-HEADED VIREO.

Popular synonyms. Solitary Greenlet, or Vireo; Blue-headed Greenlet.

Muscicapa solitaria WILS. Am. Orn. ii, 1810, 43, pl. 17, fig. 6.

Vireo solitarius VIEILL. 1817.—AUD. Orn. Biog. i, 1831, 147, pl. 28; Synop. 1839, 160; B. Am. iv, 1842, 144, pl. 239.—NUTT. Man. i, 1832, 305.—BAIRD, B. N. Am. 1858, 340; Cat. N. Am. B. 1859, No. 250.—COUES, Key, 1872, 121; Check List, 1873, No. 127; 2d ed. 1882, No. 177; B. N. W. 1874, 99; B. Col. Val. 1878, 507.

Vireosylvia solitaria BAIRD, Review, 1866, 347 (s. g. *Lanivireo*).

Lanivireo solitarius ALLEN, 1869.—B. B. & R. Hist. N. Am. B. i, 1874, 373, pl. 17, fig. 8.—RIDGW. Nom. N. Am. B. No. 141.

HAB. Eastern North America, north to "Fur Countries;" breeding from northern border of United States northward, and wintering in Cuba, eastern Mexico, and Guatemala.

"SP. CHAR. (No. 300 male.) Above olive-green, including upper tail-coverts; the top and sides of head and nape ashy plumbeous; sides of the neck plumbeous olive. Broad line from nostrils to and around eye, involving the whole lower eyelid, white. A loral line involving the edge of the eyelid, and a space beneath the eye, dusky plumbeous. Beneath white; the sides yellow, overlaid with olive, this color not extending anterior to the breast. Axillars and base of crissum pale sulphur-yellow, the long feathers of the latter much paler or nearly white. Wings with two bands and outer edges of innermost secondaries olivaceous white; the quills dark brown, edged externally with olive-green, internally with white; tail-feathers similarly marked, except that the lateral feather is edged externally also with white, the central without internal border. Bill and legs blackish plumbeous. Iris brown.

"First quill spurious, rather more than one fifth the second, which is intermediate between the fifth and sixth; third longest.

"Fresh specimen: Total length, 5.40; expanse of wing, 9.00 Prepared specimen: Total length, 5.25; wing, 2.95; tail, 2.35.

"Spring specimens show sometimes a gloss of plumbeous on the back, obscuring the olive, the contrast of colors being greater in the autumnal and young birds. Sometimes the crissum appears nearly white. The length of the spurious primary varies considerably, from .45 to .75 of an inch.

"In autumn the colors are similar, but slightly duller and less sharply defined, while the back is considerably tinged with ashy." (*Hist. N. Am. B.*)

The solitary Vireo passes through Illinois only during its spring and fall migrations; at least there seems to be no record of its breeding anywhere in the State, but it may do so in the extreme northern portion. Its known range during the nesting season extends from eastern Massachusetts and the region along the northern border of the Great Lakes northward nearly to the limit of tree growth.

"Mr. Burroughs describes the love-notes of these birds as being inexpressibly sweet and tender in both sexes. The song of the male,

as I have heard it, bears no resemblance to that of any other Vireo. It is a prolonged and very peculiar ditty, repeated at frequent intervals and always identical. It begins with a lively and pleasant warble, of a gradually ascending scale, which at a certain pitch suddenly breaks down into a falsetto note. The song then rises again in a single high note, and ceases.

"Mr. Nuttall found a nest of this species suspended from the forked twig of a wild crab-tree, about ten feet from the ground. The chief materials were dead and withered grasses, with some cobwebs agglutinated together, externally partially covered with a few shreds of hypnum, assimilating it to the branch on which it hung, intermingled with a few white paper-like capsules of the spiders' nests, and lined with a few blades of grass and slender root-fibres." (BREWER.)

SUBGENUS **Vireo** VIEILLOT.

Vireo VIEILL. Ois. Am. Sept. i, 1807, 83. Type, *Muscicapa noveboracensis* GMEL.

"SUBGEN. CHAR. Wings short and rounded, a little longer than the tail, equal to it, or shorter. First primary distinct and large, from two fifths to half or more the length of the second, shorter or not longer than the eighth." (*Hist. N. Am. B.*)

The two species of this subgenus which are known to occur in Illinois may be distinguished by the following characters:

1. **V. noveboracensis.** Two distinct white bands on wing. Lores dusky, bordered above by a yellow streak; a yellow orbital ring. Above olive-green, the nape usually ashy; lower parts white, the sides greenish yellow. Iris white, in adults.
2. **V. bellii.** Only one white band on wing, and this indistinct. Lores and orbital ring white, the former with a dusky streak. Above grayish olive, more greenish posteriorly; beneath buffy white, the sides and crissum tinged with sulphur-yellow.

Vireo noveboracensis (Gmel.)

WHITE-EYED VIREO.

Popular synonyms. White-eyed Greenlet; Little Green Hanging-bird; Chickty-beaver.

Muscicapa noveboracensis GMEL. S. N. i, 1788, 947.

Vireo noveboracensis BP. 1824.—AUD. Orn. Biog. i, 1831, 328, pl. 63; Synop. 1839, 161; B. Am. iv, 1842, 146, pl. 240.—NUTT. Man. i, 1832, 306.—BAIRD, B. N. Am. 1858 328; Cat. N. Am. B. 1859, No. 248; Review, 1866, 354.—COUES, Key, 1872, 122; Check List, 1873, No. 129; 2d ed. 1882, No. 181; B. N. W. 1874, 100; B. Col. Val. 1878, 529.—B. B. & R. Hist. N. Am. B. i, 1874, 385, pl. 17, fig. 4.—RIDGW. Nom. N. Am. B. 1881, No. 143.

Vireo cantatrix WILS. Am. Orn. ii, 1810, 266, pl. 18, fig. 6.

HAB. Eastern United States, west to edge of Great Plains; winters in Gulf States, Cuba, Bermudas (resident), and eastern Mexico, south to Guatemala.

"SP. CHAR. (No. 10,193 male, Illinois.) First primary about half the length of second, which is longer than secondaries, and about equal to the eighth; the fourth longest; third and fifth little shorter.

"Above bright olive-green; sides of neck, and a gloss on its upper surface, ashy. The middle concealed portion of feathers of lower back and rump pale sulphur-yellowish. Beneath white; the chin and lower cheeks with a greyish tinge; the sides of breast and body, with axiliars and base of crissum (more faintly), bright yellow; the inner wing-coverts and rest of crissum much paler, almost white. A broad yellow line from nostrils to and continuous with a yellow ring round the eye, which is encircled exteriorly by olivaceous; a dusky loral, but no postocular spot. Wings with two covert-bands and innermost secondaries externally, broadly yellowish white; rest of quills edged externally with olive, except the two outer and tips of other primaries, which are grayish. Rectrices edged externally with olive, except outermost, which is bordered by grayish. All the long quills bordered internally by whitish. Bill blue-black, paler on the edges; legs dark plumbeous. Iris white. Total length, 4.90; wing, 2.40; tail, 2.20.

"Specimens vary slightly in a greater amount of ashy on the head, and less brilliancy of the yellow of head and sides. Sometimes there is a decided ashy shade in the white of throat and jugulum, which again has a very faint tings of yellowish." (*Hist. N. Am. B.*)

The White-eyed Vireo—popularly known usually as the "Little Green Hanging-bird," or "Chickty-beaver," is an abundant species in suitable localities, which comprise hazel thickets, blackberry patches, bushy swamps, etc., where its presence is made known by its vociferous notes, which in loudness appear out of all proportion to the size of the little creature which produces them. These notes are remarkable for their oddity as well as for their strength. In Bermuda they are interpreted as "*ginger-beer,—quick,*" while in Illinois the writer has heard them translated by boys into "*chick'ty-beaver,—lim'ber, stick,* with special emphasis on the first syllable of each word.

The White-eyed Vireo is an exceedingly unsuspecting bird, "permitting a near approach, and when whistled to will often stop and eye you with marked curiosity, and even approach a little nearer, as if to obtain a better view, entirely unconscious of any danger. This is not so, however, when they have a nest. On this occasion they exhibit great uneasiness when their nest is visited, approaching very near to the intruder, looking down upon him with marked expressions of uneasiness, and scolding all the while with great earnestness, and with a hoarse mewing that is very peculiar." (BREWER.)

The nests of this species are elegant specimens of bird architecture. They are deeply pensile, composed of soft mosses, lichens, and other substances, and suspended from the forks of a twig, usually at a height

of three to five feet from the ground. A characteristic one described by Dr. Brewer was "composed of a singular medley of various materials, among which may be noticed broken fragments of dry leaves, bits of decayed wood and bark, coarse blades of grass, various vegetable fibres, lichens, fragments of insects, mosses, straws, stems, etc. These are all wrapped round and firmly bound together with strong hempen fibres of vegetables. Within this outer envelope in an inner nest, made of the finer stems of grasses and dry needles of the white pine, firmly interwoven." The height and diameter were each about three inches, and the cavity about two inches deep.

Vireo bellii (Aud.)

BELL'S VIREO.

Popular synonym. Bell's Greenlet.

Vireo bellii AUD. B. Am. vii, 1844, 333. pl. 485.—BAIRD, B. N. Am. 1858, 337; Cat. N. Am. B. 1859, No. 246; Review, 1866, 358.—COUES, Key, 1872, 123; Check List, 1873, No. 131; 2d ed. 1882, No. 183; B. N. W. 1874, 101; B. Col. Val. 1878, 526.—B. B. & R. Hist. N. Am. B. i, 1874, 389, pl. 17, fig. 13.—RIDGW. Nom. N. Am. B. 1881, No. 145.

HAB. Great Plains of the United States, north to Minnesota, east to Illinois (prairie districts), south (in winter) to southern Mexico (Tehauntepec). Arizona, in autumn.

SP. CHAR. (No. 1,926.) Above olive-green, brightest on the rump; tinged anteriorly with ashy; the top and sides of head ashy, in faint contrast. A line from nostrils to eye (scarcely beyond it), and eyelids very pale yellowish white; lores dusky. Under parts, including inner wing-coverts, and edge of wing, creamy white; the sides, axillars, and crissum pale yellow, sides of lower neck and of breast glossed with olivaceous, faintest on the longer feathers of the latter. Two rather narrow bands on the wing-coverts, and the outer edges of innermost secondaries white; the other quills edged with faded olivaceous. Inner edges of quills whitish. Tail feathers brown, edged externally with olive; internally fading into paler brown. Median portion of rump feathers concealed with pale yellowish. Bill horn-color above, pale below. Legs plumbeous. "Iris brown."

"First quill spurious; not quite half the second, which is about equal to the eighth; third and fourth quills longest; fifth scarcely shorter. Tail nearly even, or a little rounded, the feathers narrow.

"Total length, 4.20; wing, 2.18; tail, 1.90; tarsus, .75.

"The above description is taken from a type specimen received from Mr. Audubon, and represents the average spring plumage. Autumnal skins are rather brighter, and there is occasionally an ochraceous tinge on the white of the under parts.

"This species at first sight appears like a miniature of *V. gilvus*, the head being almost exactly similar. The back is, however, much brighter olive, the sides and crissum deeper yellow. The superciliary light stripe is shorter. The white markings of the wings are wanting in *gilvus*. The wing, tail, and feet are entirely different in their proportions." (*Hist. N. Am. B.*)

In its habits this species is nearly a counterpart of the White-eyed Vireo, inhabiting, like that species, dense thickets or brier patches. In Illinois it is confined to the prairie districts, and is almost everywhere a much less common bird than *V. noveboracensis*. The writer first met with it on Fox Prairie, in Richland county, on the 8th of June, 1871, being first apprised of its presence by its very curious notes. Mr. Nelson found it in the same locality four years later, but in 1883 the writer was unable to discover any of the species during several weeks' search in the same place and adjacent localities, all the thickets which it formerly inhabited having given way to cultivated fields. Mr. Nelson's experience coincided in the main with that of the writer, except that he found the species so shy that only two were shot, while the writer had no difficulty in shooting several, but was unable to find or secure them, owing to the tangled briery growth in which they fell. Mr. Nelson says:*

"Rather common in the dense patches of bushes on the prairie. The males would appear on the top of a tall bush and utter a queer song entirely peculiar, but so shy were they that at the first alarm they would disappear. Although repeated efforts were made to obtain specimens during the week we were there, only two were shot."

He subsequently (June 23, 1875) obtained a single specimen near Chicago. (See *Bull. Essex Inst.* Vol. VIII., 1876, p. 103.)

* Bull. Essex Inst. ix, 1877, p. 48.

Family LANIIDÆ.—The Shrikes.

"Char. Bill very powerful, strong, and much compressed, the tip abruptly hooked, deeply notched, and with a prominent tooth behind the notch; both mandibles distinctly notched, the upper with a distinct tooth behind, the lower with the point bent up. Tarsi longer than the middle toe, strongly scutellate. Primaries ten; first primary half the second, or shorter (occasionally wanting). Wings short, rounded; tail long and much graduated. Sides of tarsi with the plates divided on the outside." (*Hist. N. Am. B.*)

Of this family only a single genus is known in North America.

Genus LANIUS Linnæus.

Lanius Linn. S. N. ed. 10, i, 1758, 93. Type, *L. collurio* Linn.

"Gen. Char. Feathers of forehead stiffened; base of bill, including nostrils, covered by bristly feathers directed forward. Bill shorter than the head, much compressed, and very powerful. Culmen decurved from base, the mandible abruptly bent down in a powerful hook with an acute lobe near the tip. Tip of lower mandible bent upwards in a hook; the gonys very convex. Rictus with long bristles. Legs stout; the tarsi rather short, and longer than the middle toe; the lateral equal; the claws all very sharp and much curved. Wings rounded; the first primary about half the second, which is equal to the sixth or seventh. Tail longer than the wings, much graduated, the feathers broad." (*Hist. N. Am. B.*)

Our two species may be distinguished by the following characters:

Common Characters. Above plain gray (brownish in young of *L. borealis*) beneath whitish, with or without darker waved lines or bars; side of head marked with a broad black band, covering lores and auriculars; wing, and tail black, the former with a white patch at base of primaries, the latter with outer feathers chiefly white.

1. **L. borealis.** Wing more than 4.50 inches; tarsus less than 1 inch. A white crescentic spot on lower eyelid; lower parts always more or less waved with dusky. *Adult:* Above fine light bluish-gray, the scapulars and upper tail-coverts nearly white. *Young:* Dull brownish, beneath brownish white waved with dusky; black auricular band indistinct.
2. **L. ludovicianus.** Wing less than 4.50 inches; tarsus more than 1 inch. No white on lower eyelid; lower parts waved with dusky only in young.
   - α *ludovicianus.* Above deep plumbeous, the upper tail-coverts scarcely or not at all lighter than the back; axillars plumbeous, the jugulum and sides strongly tinged with the same.
   - β. *excubitorides.* Above fine light bluish-gray, the upper tail-coverts more or less distinctly paler (sometimes nearly pure white), the jugulum and sides scarcely tinged with grayish.

Lanius borealis Vieill.

NORTHERN SHRIKE.

Popular synonyms. Great American Shrike; Great Northern Shrike or Butcher Bird; White Whiskey-jack (Fur Countries).

Lanius borealis VIEILL. Ois. Am. Sept. i, 1807, 90, pl. 50.—SW. & RICH. F. B. A. ii, 1831 111 pl. 33.—AUD. Synop. 1839, 157; B. Am. iv, 1842, 130, pl. 236.—RIDGW. Nom. N. Am. B. 1881, No. 148.—COUES, 2d Check List, 1882, No. 186; B. Col. Val. 1878, 558.

Collyrio borealis BAIRD, B. N. Am. 1858, 324; Cat. N. Am. B. 1859 No. 236.

Collurio borealis BAIRD, Review, 1866, 440.—COUES, Key, 1872, 125; Check List 1..., No. 134; B. N. W. 1874, 101.—B. B. & R. Hist. N. Am. B. i, 1874, 415 pl. 19. figs. 1, 2.

HAB. Northern North America, south, in winter, to about 35°; breeding north of the United States, and in higher mountain districts of the latter.

SP. CHAR. *Adult in breeding season.* Above light ash-gray, becoming gradually white on forehead, over eyes, on tips of longer scapulars, and on upper tail-coverts, the latter, however, tinged with gray. Lores and auriculars black. Wings black, the secondaries and shorter primaries narrowly tipped with grayish white, the primaries with a white patch at the base. Lower parts grayish white, the jugulum, breast, and sides transversely waved or vermiculated with dusky gray. Tail black, the outer web of lateral feather and ends of all except middle pair white. Bill entirely black; feet black; iris brown. *Adult in winter.* Similar, but lores grayish white, and mandible whitish at base. *Young.* Above grayish brown, tinged, more or less with rusty, the longer scapulars and upper tail-coverts paler; black of lores and auriculars indistinct or obsolete; wing-coverts edged and tipped with rusty or buff; spot at base of primaries much restricted, or obsolete. Lower parts brownish white, everywhere distinctly vermiculated with dusky.

Total length, about 10½ inches, extent 14½. Wing about 4.50.

Although it has been recorded as breeding in the northern portion of Illinois, there can now be no doubt that all such records refer to the Loggerhead (*L. ludovicianus*), and not to the present species, which is probably only a winter visitor, and a rare one at that, beyond the middle portion of the State. The summer habitat of the Great Northern Shrike, as may be inferred from its name, includes the more northern portions of the continent, as far north as the limits of tree growth, and across from ocean to ocean. It is said also to breed in mountainous regions of the United States, but we have little reliable information on this point.

The general habits of this species partake of those of others of its family. "Its bold audacity and perseverance are quite remarkable, and are often displayed, in the fall, in the manner in which it will enter an apartment through an open window and attack a Canary, even in the presence of members of the family. It rarely fails, if it gains access to the cage, to destroy its inmates before the latter can be rescued by the intervention of those present, and only by great promptness in sheltering the cage. In one instance the writer was sitting at a closed window, reading, with a Canary hanging above him. Suddenly there was a severe blow struck at

the pane of glass near the cage, and the frightened Canary uttered cries of alarm, and fell to the bottom of its cage. The cause was soon explained. A Shrike had dashed upon the bird, unconscious of the intervening glass, and was stretched upon the snow under the window, stunned by the blow. He revived when taken up, and lived several days, was sullen, but tame, and utterly devoid of fear. He refused raw meat, but eagerly tore in pieces and devoured small birds when given to him. His tameness and indifference to our presence may have been occasioned by stupor arising from his injury. In another case a Shrike made a similar attack, but escaped unharmed, and though he remained about the house several days, was too wary to allow himself to be decoyed within gunshot." (BREWER.)

Lanius ludovicianus (Linn.)

LOGGERHEAD SHRIKE.

Popular synonyms. Louisiana Shrike; Carolina Shrike; Southern Butcher Bird; "Mocking Bird;" Common American Shrike.

a. **ludovicianus.**

Lanius ludovicianus LINN. S. N. ed. 12, i, 1766, 134.—AUD. Orn. Biog. i, 1831, 300, pl. 37; B. Am. iv, 1842, 135, pl. 237.—COUES, B. Col. Val. 1878, 561; 2d Check List, 1882, No. 187. —RIDGW. Nom. N. Am. B. 1881, No. 149.

Collyrio ludovicianus BAIRD, B. N. Am. 1858, 325; Cat. N. Am. B. 1859, No. 237.

Collurio ludovicianus BAIRD, Review, 1866, 443.—B. B. & R. Hist. N. Am. B. i, 1874, 418, pl. 19, fig. 4.—COUES, B. N. W. 1874, 233.

Lanius carolinensis WILS. Am. Orn. iii, 1811, 57, pl. 22 fig. 5.

b. **excubitorides.**—White-rumped Shrike.

Lanius excubitorides SWAINS. & RICH. Faun. Bor. Am. ii. 1831, 115, pl. 34.

Collyrio excubitoroides BAIRD, B. N. Am. 1858, 527; ed. 1860, pl. 75, fig. 2; Cat. N. Am. B. 1859, No. 238.

Collurio excubitoroides BAIRD, Review, 1866, 445.

Collurio ludovicianus var. *excubitoroides* COUES, Key, 1872, 125; Check List 1873, No. 135*a*; B. N. W. 1874, 102.

Lanius ludovicianus excubitorides COUES, B. Col. Val. 1878, 561; 2d Check List, 1882, No. 188; 2d Key, 1884, 338.—RIDGW. Nom. N. Am. B. 1884, No. 149*a*.

Lanius mexicanus BREHM, J. f. O. 1854, 145, 148.

HAB. Whole of temperate North America, including Mexico, but in many portions of the Eastern Province very local. The so-called *L. excubitorides* mainly restricted to the arid interior regions, from the Saskatchewan plains to the table-lands of Mexico, including Lower California.

SP. CHAR. *Adult.* Above ash-gray, usually somewhat paler—occasionally white—on the upper tail-coverts, the tips of the longer and outermost scapulars distinctly white. Wings and tail black; secondaries tipped with white, and primaries with a white patch at the base; ends of tail-feathers, except middle pair, white, the outer rectrices sometimes almost wholly white. Lores, orbits, and auriculars deep black. Lower parts entirely white, the sides sometimes tinged with grayish. Bill and feet black, at all seasons; iris brown. *Young.* Above brownish gray, vermiculated, except on middle of back, with

dusky, and tinged, more or less, with buff. Middle and greater wing-coverts, tipped with grayish buff, enclosing a curved dusky line; secondaries tipped with pale buff. Breast and sides pale buff or light grayish, vermiculated with dusky grayish. Black on side of head replaced by grayish dusky, with less sharply defined outlines.

Total length, about 9 inches; extent, 12.50; wing, about 3.75-4.10; tail, about 4.00.

Although the so-called "White-rumped Shrike" has usually been recognized as a well-marked race, it is found, when very large series of specimens are carefully compared, to rest upon a rather unstable basis. The ascribed characters are good enough if they were constant, which they are not; and about all that we can at present admit is a decided *tendency* in specimens from the arid interior regions to be lighter in color than those from the more humid districts on either side. The opposite extreme is seen in specimens from Florida, which are very dark, but probably hardly separable as a race.

Specimens of this species from Illinois have been referred to *excubitorides;* but, while some specimens approach the latter, none that I have seen are typical of that style. Regarding this matter, Mr. Nelson makes the following observations in his catalogue of the birds of the northeastern portion of the State (*Bull. Esscx Inst.* Vol. VIII., 1876, p. 104):

"A small series of shrikes from the northern and southern extremes of the State have been submitted to my friend, Mr. J. A. Allen, who replies as follows: 'They all belong decidedly to var. *ludovicianus*, though somewhat lighter than Florida specimens, with smaller bills, etc. There is a slight approach in some of them to *excubitorides*, but the resemblance to Florida specimens is far greater than to specimens from the West—Wyoming, Utah, Colorado, etc. During the past two years I have examined a large number of shrikes from northern Illinois, and have found them, in nearly all cases, to be much nearer *ludovicianus* than *excubitorides*.* Specimens obtained in the Wabash Valley and other parts of southern Illinois, exhibit the same characteristics in about equal proportion, as far as the number of specimens seen would permit me to judge."

In all portions of the State of Illinois that are not too thickly wooded, the Loggerhead Shrike is a more or less common species. It is partial to those more open localities where there are hedgerows or plenty of low thorny trees, preferably the honey-locust (*Gleditschia triacanthos*), wild crab-apple, or trees of like character.

* An example collected at Mt. Carmel, January 5, 1886, by Master Jesse J. Turner, and by him presented to the National Museum, is decidedly the darkest in color of any of the numerous specimens in the National collection, including those from Florida.

These seem indispensable to its presence for the reason that the slender, sharp-pointed thorns are required for impaling its prey, and the matted impenetrable covert for the concealment or protection of its nests.

Notwithstanding the fact that this species occasionally kills and devours small birds, it is of great benefit to the farmer from the fact that it destroys large numbers of grasshoppers and field mice. The habit of impaling its victims on thorns is one common to the whole family of Shrikes, and also one that has not been satisfactorily explained; for it seems that objects so impaled are seldom touched by the bird afterward. It has been suggested that the bird improves every opportunity to procure food, and when not needing it impales it to provide for an emergency; and that when fresh food is readily obtainable it is preferred. This may be the true explanation, but we think a more plausible one may be found.

In the protection of its young, no bird displays greater courage or more affectionate solicitude for its offspring. I have repeatedly, when I had climbed to a nest containing young, had the parent birds alight within my reach and retreat only when I had attempted to grasp them; all the while they were greatly excited with anger, and were the opportunity given to do so without being seen would actually bite my hand. During such occasions they keep up a peculiar crackling sound, mingled with a sonorous *qua a-a, qua a-a.*

The notes of this species are exceedingly varied; so much so, in fact, that it is confounded by many people with the Mockingbird, although this is perhaps as much on account of the general similarity of their plumage as from any other reason. Some of the notes are soft and musical, but most of them are harsh, that most frequently heard resembling the creaking of an ungreased wheelbarrow or rusty gate-hinge. It is supposed that it imitates the notes of the smaller birds in order to entice them within its reach.

When taken from the nest and reared in captivity, the Loggerhead Shrike makes a most affectionate and interesting pet. It becomes so perfectly tame as not to require the restraint of a cage, but will follow its keeper about the fields, and seeks his companionship with all the intelligent devotion of a dog.

While watching for its prey, the Shrike occupies a prominent perch, as the summit of a small tree in the midst of a field or common, sitting "bolt upright," and scanning carefully the surroundings in every direction. Its flight is very peculiar; on leaving the

perch it sinks nearly to the ground, describing a curve as it descends and passing but a few feet above the surface, ascends in the same manner to the object on which it next alights. The flight is performed in an undulating manner, the bird sustaining itself a short time by a rapid fluttering of the wings, and sinking as this motion is temporarily suspended. While flying, the white patch on the wing is very conspicuous.

The very bulky nests of this species are usually placed in thorny trees or in those having a dense canopy of vines. At Mount Carmel, however, I have frequently found them in apple trees. They are composed largely of wool and feathers. When built in young trees of the honey locust, where it is an absolute impossibility to reach them by climbing, they are often poked from their position out of spite, by the "small boy" with poles or fence-rails.

Family **AMPELIDÆ**.—The Waxwings.

Char. Legs moderate. Nostrils elongated, linear, with the frontal feathers extending close to the edge and to anterior extremity, concealing them; these feathers short, velvety and erect, with few bristles. Wings very long and pointed; outer or first primary so much reduced as to be almost inappreciable; the second nearly the longest. Wing nearly twice the length of the short, narrow, even tail. Under coverts of tail reaching almost to its tip. Secondary quills of fully adult birds with flat horny appendages at end of shaft like red sealing-wax (except in *A. japonica*). Young birds streaked beneath. Adults plain.

This family, as restricted, contains but a single genus, *Ampelis*. The most obvious characters consist in the short, broad, and rather depressed bill, with short, decidedly convex gonys and densely feathered nasal fossæ, and the wax-like appendages to the tips of the secondary quills in the adult.

The family is usually enlarged, however, to include a so-called subfamily, Ptilogonatinæ, which may be distinguished as follows:

Common Characters. Gape of mouth nearly straight. Metatarsal scutellæ in three series. Body plain beneath, in adults.

Ampelinæ. Wings very long and much pointed, longer than the short even tail. First primary excessively rudimentary; the outermost about the longest. Gape without bristles. Frontal feathers extending forward beyond the nostrils. Often with horny appendages like red sealing-wax at end of shaft of secondaries.

Ptilogonatinæ. Wings rounded, shorter than the graduated tail. First primary nearly half the second. Gape well bristled. Frontal feathers falling short of the nostrils. No red horny appendage to wing feathers.

Subfamily **Ampelinæ**.

Genus **AMPELIS** Linnæus.

Ampelis Linn. S. N. ed. 12, i, 1766, 297. Type, *A. garrulus* Linn.

Gen. Char. Tail even, much shorter than the wing. Crown with a well-developed, soft, pointed crest. Other characters are as given above for the family *Ampelidæ*.

Only three species of this genus are known, one of them being peculiar to North America, another restricted to Japan and adjacent parts of northeastern Asia, the third of circumpolar distribution. They are beautiful birds, characterized by exquisitely soft plumage

of subdued but harmoniously blended and contrasted colors, and are besides of most graceful form. They may be distinguished as follows:

COMMON CHARACTERS. A lengthened crest of soft blended feathers. Colors, soft silky-brownish becoming more vinaceous anteriorly, and ashy posteriorly above. A black stripe on side of head, from nasal feathers across lores through the eye and behind it beneath crest, and a patch of the same on chin, with a white streak between on side of lower jaw.

A. Wing variegated. Lower tail-coverts rufous. Crest much developed. Forehead and side of head bright purplish rufous. Black patch covering whole throat, and sharply defined. No white line between black of lores, etc., and brown of forehead. Inner webs of primaries tipped narrowly with white.

a. Terminal band of tail rose-red.

A. japonica.* Greater wing-coverts dull red. No yellow on tips of primaries. Rufous of crissum stained with red. *Hab.* Japan and eastern Siberia.

b. Terminal band of tail rich yellow.

A. garrulus. Secondaries and primary coverts tipped with white, forming two broad short bands. Primaries with outer webs often tipped with yellow. *Hab.* Arctic regions of both hemispheres; in winter, south into northern United States and along Rocky Mountains as far as Fort Massachusetts, New Mexico.

B. Wings unvariegated. Lower tail-coverts white. Crest moderately developed. Forehead, etc., not different from crest. Chin, only, black, this fading gradually into the brown of throat. A white line between black of lores, etc., and brown of forehead.

a. Terminal band of tail rich yellow.

A. cedrorum. Wings plain bluish-ashy. *Hab.* Whole of North America, from 52° N., south to Guatemala, Jamaica and Cuba in winter.

Ampelis garrulus Linn.

BOHEMIAN WAXWING.

Popular synonyms. Northern Chatterer or Waxwing; European Chatterer or Waxwing; Black-throated Waxwing; Waxen Chatterer.

Lanius garrulus LINN. S. N. ed. 10, i, 1758, 95.

Ampelis garrulus LINN. S. N. ed. 12, i, 1766, 297.—BAIRD, B. N. Am. 1858, 307, 923; Cat. N. Am. B. 1859, No. 232; Review, 1866, 405.—COUES, Key, 1872, 115; Check List, 1873, No. 118; 2d ed. 1882, No. 166; B. N. W. 1874, 91; B. Col. Val. 1878, 459.—B. B. & R. Hist. N. Am. B. i, 1874, 396 pl. 18, fig. 1.—RIDGW. Nom. N. Am. B. 1881, No. 150.

Bombycilla garrula VIEILL. 1823.—SW. & RICH. F. B. A. ii, 1831, 237.—NUTT. Man. ii, 1834, 579.—AUD. Orn. Biog. iv, 1838, 462, pl. 363; Synop. 1839, 165; B. Am. iv, 1842, 1865, pl. 245.

HAB. Northern parts of Northern Hemisphere; in North America, breeding in the northern coniferous forests, south to northern border of the United States, in Rocky Mountains; in winter, south, more or less regularly to lat. 40°, irregularly, still farther south. Not recorded from Pacific coast south of Alaska.

"SP. CHAR. Crest lengthened. Body generally soft, silky brownish-ashy, with a purplish cast, the wing-coverts and scapulars more brownish, becoming more reddish anteriorly and ashy posteriorly; the rump and upper tail-covert, as well as the secondaries, being nearly pure ash. Anteriorly the color passes gradually into deep vinaceous chestnut on the forehead to behind the eye and on the cheeks; abdomen yellowish white. Lower tail-coverts deep chestnut. A stripe on side of the head, covering the lores and nasal feathers (scarcely meeting across the forehead), involving the eye and continued back toward the occiput and beneath the crest, with a large patch covering the chin and throat, deep black; a narrow crescent on lower eyelid, and a short stripe between the black of the throat and that of the chin at the base of the lower mandible, two very broad bars on

**Ampelis phœnicopterum* TEMM. Pl. Col. ii, 1838, pl. 450.

the wing, one across ends of primary coverts, and the other across ends of secondaries (the first occupying both webs, and the latter the outer), white. Primary coverts, primaries, and tail slaty black, the latter growing gradually ashy basally. A broad band across end of tail, and a longitudinal space along end of outer web of primaries, gamboge-yellow,—the marks on primaries, however, sometimes white, only stained with yellow. Each of the secondaries with an expanded continuation of the shaft, in form of flattened, very thin, somewhat elliptical appendages, of a bright vermilion-red resembling red sealing-wax. Length, 7.40; wing, 4.50; tail, 3.00." (*Hist. N. Am. B.*)

The sexes are essentially alike in coloration, but younger birds have little or no yellow on the wing, the markings being entirely white, or yellowish white, and reduced in size; the yellow tip to the tail is also narrower, and the "sealing-wax" appendages more or less rudimentary, or even wanting altogether.

This exquisite bird is an abundant though very irregular winter visitor to the extreme northern portion of the State, and even occasionally wanders to the southern portion, Professor Forbes having taken a specimen at Villa Ridge, Pulaski county, December 18, 1879. (See *Bull. Nutt. Orn. Club*, Vol. V., p. 118.)

In Cook county, Mr. Nelson says* that it is "an irregular but occasionally abundant winter resident, especially along the lake. Arrives in December, and sometimes remains until April. The winter of 1875–76 they were unusually numerous. In a letter dated March 16, 1876, Mr. Charles Douglas, of Waukegan, describes an "immense" flock of these birds which he observed the day previous, upon the lake shore near that town. The birds were feeding upon the juniper berries found there, and covered, according to Mr. Douglas's estimation, an area at least ten rods square. While feeding, those in the rear were continually flying and alighting in advance, thus keeping the flock moving so that it was difficult to overtake them. A few days later the flock separated into numerous smaller ones, and soon departed for the north."

Ampelis cedrorum (Vieill.)

CEDAR WAXWING.

Popular synonyms. Carolina Wax-wing; Cedar-bird; Cedar-lark; Cherry-bird.

Bombycilla cedrorum VIEILL. Ois. Am. Sept. i, 1807, 88, pl. 57.

Ampelis cedrorum GRAY, 1849.—BAIRD, B. N. Am. 1858, 319; Cat. N. Am. B. 1859, No. 233; Review, 1866, 407.—COUES, Key, 1872, 115; Check List 1873. No. 119; 2d ed. 1882, No. 167; B. N. W. 1874, 93, 233: B. Col. Val. 1878, 470.—B. B. & R. Hist. N. Am. B. i, 1874, 401, pl. 18, fig. 2.—RIDGW. Nom. N. Am. B. 1881, No. 151.

Ampelis americana WILS. Am. Orn. i, 1808, 107, pl. 7, fig. 1.

Bombycilla carolinensis STEPH. Gen. Zoöl. x, 1817, 422.—AUD. Orn. Biog. i, 1831, 227, pl. 43; Synop. 1839, 165; B. Am. iv, 1842, 169, pl. 246.—NUTT. Man. i, 1832, 248.

*Bull. Essex Inst. Vol. viii, 1876, p. 103.

HAB. Whole of temperate North America, south (in winter only?) to Guatemala, Jamaica, and Cuba; breeds nearly throughout its summer range.

SP. CHAR. Crest moderate. General color soft vinaceous cinnamon, deepest anteriorly, more olivaceous on back, scapulars, and wing-coverts, passing into pure light ash on the rump and upper tail-coverts, and into dingy yellow on flanks and abdomen. Lower tail-coverts white. Whole of the wing posterior to the greater coverts slaty ash, almost black along end of inner webs of primaries, the outer webs of which are narrowly edged with hoary whitish. Tail slate, passing into black terminally, tipped with a broad, sharply defined band of gamboge-yellow. A broad stripe of intense velvety-black on side of head, starting from nostril, passing across lores, and involving the eye, continued from it beneath the crest to the occiput; chin dull black, blending gradually into the brownish of the throat. A narrow white line across the forehead and along the side of crown, between brown of crown and back lores, etc., a narrow crescent on lower eyelid, and a stripe between black of lores and that of the throat, white. Fully adult male and female with each secondary quill terminated by a bright red horny appendage to the shaft. Younger birds with these very small and few in number, or entirely absent. *Young.* In general appearance similar to the adult. Colors more grayish, with indistinct concealed whitish streaks on nape and down back, these stripes becoming very conspicuous on the sides and flanks and across breast. No black on chin. Rump grayish brown; abdomen and flanks dingy whitish. No appendages to secondaries, and the yellow band across end of tail narrower than in adult.

Regarding alleged sexual differences of plumage in this species, we quote the following from E. A. Mearns, in the "Nuttall Bulletin" for April, 1878, p. 70: "I have been so struck by the great variation in different specimens of this species, in regard to the red wax-like appendages, that I have taken particular pains to procure a large series of specimens illustrating this difference. In this series I can scarcely detect any sexual difference in that respect, except that the particularly well-developed specimens are all males. In the normal plumage the waxen appendages are confined to the tips of the secondary remiges, but in my cabinet are several specimens which have them affixed to the *primaries*, and in several instances even to the *rectrices*; but they are usually small and few in number. One specimen has several of these attachments to the primaries, which are nearly as well developed as those on the secondaries. But the most remarkable specimen is a handsome male (No. 545, adult male, April 11, 1875, Highland Falls, N. Y., E. A. M.), having these ornaments attached, not only to each of the secondaries and *three of the primaries*, but each of the rectrices is embellished by a well-developed red appendage. Several other specimens have large red tips to each of the rectrices; and one (No. 1,558, male, February 23, 1878, E. A. M.) *has five* of its primary remiges (5th to 9th) tipped with yellow. Professor Baird* says: "A specimen from

* Baird, Brewer, and Ridgway, Birds N. Am. i, p. 401, 1874.

Guatemala (No. 50,455, male) is almost identical with examples from the United States, but differs in having a small spot of yellow at the tip of each primary; also there are red appendages on the tip of a few tail-feathers, as well as the *longest feathers of the lower tail-coverts.*"*

"While speaking of this species, it may be well to add that in specimens taken in worn plumage, late in summer, the colors are very much bleached, all of the colors being very much paler; the white band across the forehead is very much broadened, and the black of the chin much lightened. The top of the head and neck has an ochraceous suffusion, and the cinnamon-color of the back extends into, and partially subdues the ash of the rump."

The elegant Cedar Waxwing is an abundant species throughout the State, but it is so capricious in its movements that its presence or absence appears to bear no relation to season or weather, the question of food supply being probably the controlling influence in its wanderings. Wherever there are ripe cherries (wild or cultivated), cedar berries, or berries of the black gum (*Nyssa multiflora*) it is sure to be present. Except during the breeding season they rove in flocks, uttering, both while on the wing and when feeding, a very simple and perfectly monotonous lisping note, which is apparently their only utterance; for, although belonging to the *Oscines*, or so-called "Singing Birds," this species is perhaps the most silent of all the Passeres.

During the spring of 1881, when the willow trees in a swamp near Wheatland, Indiana, were infested with myriads of the larvæ of a small beetle (*Plagiodera lapponica*), immense number of Cedar-birds were present feeding exclusively on these insects. They are said also to be very fond of the destructive canker worm. In short, there can be no doubt that, although to a certain extent inimical to the grower of small fruits, they partially if not fully pay for what they take, in ridding his premises of insects which would otherwise injure if not destroy his trees.

* Italics my own.

Popular synonym. Bell's Greenlet.

Vireo bellii AUD. B. Am. vii, 1844, 333, pl. 485.—BAIRD, B. N. Am. 1858, 337; Cat. N. Am. B. 1859, No. 246; Review, 1866, 358.—COUES, Key, 1872, 123; Check List, 1873, No. 131; 2d ed. 1882, No. 183; B. N. W. 1874, 101; B. Col. Val. 1878, 526.—B. B. & R. Hist. N. Am. B. i, 1874, 389, pl. 17, fig. 13.—RIDGW. Nom. N. Am. B. 1881, No. 145.

Family HIRUNDINIDÆ.—The Swallows.

"Char. Bill short, triangular, very broad at base (nearly as wide as long) and much depressed, narrowing rapidly to a compressed, notched tip; mouth opening nearly to the eyes. Primaries nine, graduating rapidly less from the exterior one; tail feathers twelve. Feet weak; tarsi scutellate, shorter than middle toe and claw. Number of joints in toes normal; basal joints of middle toe partially or entirely adherent to lateral toes. Wings long, falcate. Tail forked. Eyes small. Plumage compact, usually lustrous. All the American species with a white patch on the sides under the wing, and with the irides hazel or brown." (*Hist. N. Am. Birds.*)

The *Hirundinidæ* form a very well-marked group of birds, easily distinguished from all others except the *Cypselidæ* (Swifts), to which they exhibit a close resemblance in external appearance and habits, but from which, apart from the internal structure, they differ radically in the possession of nine, instead of ten primaries; twelve, instead of ten tail-feathers; scutellate tarsi, toes with normal number of joints (1, 2, 3, and 4, respectively, exclusive of ungual phalanges), instead of a different proportion; differently shaped nostrils, and other minor characters.

The following synopsis, adapted from that in *Hist. N. Am. B.* (Vol. I., pp. 326, 327), may serve to identify the North American genera.

Genera of North American Hirundinidæ.

A. Nostrils broadly oval, or circular; opening upwards and forward, and exposed; without overhanging membrane.

a. Edge of wing smooth. Tarsus short, stout; equal to middle toe without claw; feathered on the inner side above. Nostrils almost or entirely without membrane.

Bill stout; culmen and commissure much curved. Frontal feathers without bristles. Tail deeply forked. Color lustrous black; belly and crissum sometimes white. ..... **Progne.**

Bill rather weaker; commissure and culmen nearly straight to near tip. Frontal feathers bristly. Tail nearly even. Throat, rump, and crissum, and usually forehead, rufous; belly white..... **Petrochelidon.**

b. Edge of wing in adult male armed with stiff recurved hooks. Bill larger and more depressed. Tail emarginate only. Color uniform dull brown, the crissum white. ..... **Stelgidopteryx.**

B. Nostrils lateral; bordered behind and inside, or overhung by membrane, the outer edge of which is straight, and directed either parallel with axis of bill or diverging from it.

a. Tarsus short; about equal to middle toe without claw. Tibial joint feathered; feathers extending along inside of upper end of tarsus.

Tarsus bare at lower end. Lateral claws reaching only to base of middle.

Tail very deeply forked, much longer than closed wings; lateral feathers linear and vey narrow at end, twice the length of central. Upper parts

and pectoral collar steel-blue; front and throat, sometimes under parts, rufous. Tail-feathers with white spots on inner webs.....**Chelidon.**

Tail with shallow fork, not exceeding half an inch, shorter than closed wings. Feathers broad. Color blue or green above, with or without white rump; white beneath. Tail-feathers without spots.....**Tachycineta.**

Tarsus with a tuft of feathers at lower end. Lateral claws lengthened reaching beyond base of middle claw.

Tail slightly forked. Color dull brown above; beneath white, with brown pectoral collar.....**Clivicola.**

Genus **PROGNE** Boie.

Progne Boie, Isis, 1826, 971. Type, *Hirundo purpurea* Linn.=*H. subis* Linn.

"Gen. Char. Body stout. Bill robust, lengthened; lower or commissural edge of maxilla sinuated, decidedly convex for basal half, then as concave to the tip, the lower mandible falling within its chord. Nostrils superior, broadly open, and nearly circular, without any adjacent membrane, the edges rounded. Legs stout. Tarsus equal to middle toe without claw; the joint feathered: lateral toes about equal; the basal joint of the middle toe half free internally, rather less so externally. Claws strong, much curved. Nest in hollow trees. Eggs white.

"The species of this genus are the most powerful and robust of the Swallows. Some are glossy black, others whitish below." (*Hist. N. Am. B.*)

Progne subis (Linn.)

PURPLE MARTIN.

Popular synonyms. Martin; House Martin; Purple Swallow; American Martin; Violet Swallow.

Hirundo subis Linn. S. N. ed. 10, i, 1758, 192.

Progne subis Baird, Review, 1865, 274.—B. B. & R. Hist. N. Am. B. i, 1874, 320, pl. 16, figs. 7, 10.—Coues, B. Col. Val. 1878, 445; 2d Check List, 1882, No. 165.—Ridgw. Nom. N. Am. B. 1881, No. 152.

Hirundo purpurea Linn. S. N. ed. 12, i, 1766, 344.—Wils. Am. Orn. v, 1812, 58, pl. 39, figs. 2, 3.—Aud. Orn. Biog. i, 1831, 115, pl. 23; Synop. 1839, 37; B. Am. i, 1840, 170, pl. 45.

Progne purpurea Boie, 1826.—Baird, B. N. Am. 1858, 314; Cat. N. Am. B. 1859, No. 231.—Coues, Key, 1872, 114; Check List, 1873, No. 117; B. N. W. 1874, 91.

Hab. Whole of temperate North America, wintering in Mexico (and southern United States?); Bermudas; accidental in Europe.

Sp. Char. *Adult male.* Entirely uniform lustrous steel-blue, with violet-blue reflections; the wings and tail black, slightly glossed with bluish. *Adult female.* Above glossy blue-black, becoming hoary grayish on the forehead, and sometimes on the nape also; throat and jugulum gray; rest of lower parts white, relieved by dusky shaft-streaks. *Young.* Similar to the adult female, but above less glossy blackish, and the nape crossed by a more distinct grayish collar. Wing, 5.50–6.20; tail, 3.20–3.80, forked for .80–1.00 inch.

The young male is several years in attaining the uniform glossy violet-black plumage, the steel-blue feathers appearing in gradually coalescing patches.

No bird of North America is more deserving of protection and of encouragement to live about the habitations of man than the Purple Martin. One pair of them will destroy more insects in a season than all the English Sparrows in a township will kill in their lifetime. Besides, their notes are pleasing to the ear, and their actions both when on the wing and when perching upon their boxes extremely interesting.

The ordinary notes themselves of this species are very agreeable to say the least, and during the breeding season the male has a continued and varied song of great beauty and considerable power; and it is as much on account of the sweetness of their notes as for their familiarity and usefulness that these birds are such general favorites. I have observed that in the wild woods, where these handsome birds have not yet had opportunity to avail themselves of man's hospitality, they are as lovely and musical as when semi-domesticated in our door-yards, and in all respects exactly the same birds.

GENUS **PETROCHELIDON** CABANIS.

Petrochelidon CAB. Mus. Hein, 1850. 47. Type, *Hirundo melanogaster* SWAINS., = *P. swainsoni* SCL.

"GEN. CHAR. Bill stout and deep, somewhat as in *Progne*. Nostrils entirely superior open, without overhanging membrane on the inner (or upper) side, but somewhat overhung by short bristles, seen also along base of inner mandible and on chin. Legs stout; the tarsi short, not exceeding the middle toe exclusive of its claw; feathered all around for basal third or fourth, though no feathers are inserted on the posterior face. Tail falling short of the closed wings, nearly square or slightly emarginate; the lateral feathers broad to near the ends, and not attenuated." (*Hist. N. Am. B.*)

This genus, like *Chelidon*, is nearly cosmopolitan, at least two species—*P. arborea* (GOULD) and *P. ariel* (GOULD)—belonging to *Australia*, and two or more to tropical America.

Petrochelidon lunifrons (Say).

CLIFF SWALLOW.

Popular synonyms. Eave, or Square-tailed Eave, Swallow; Crescent Swallow; White-fronted Swallow; Republican Swallow.

Hirundo lunifrons SAY, Long's Exp. ii, 1823, 47.—SW. & RICH. F. B. A. ii, 1831, 331.—BAIRD, B. N. Am. 1858, 309; Cat. N. Am. B. 1859, No. 226.

Petrochelidon lunifrons LAWR. 1861.—BAIRD, Review, 1865. 288.—COUES, Key, 1872, 114; Check List, 1873, No. 114; 2d ed. 1882, No. 162; B. N. W. 1874, 88; B. Col. Val. 1878, 426, (excel. syn. pt.).—B. B. & R. Hist. N. Am. B. i, 1874, 334, pl. 16, fig. 13.—RIDGW. Nom. N. Am. B. 1881, No. 153.

Hirundo fulva "VIEILL." AUD. Orn. Biog. i, 1831, 353, pl. 58 (*nec* VIEILL.); B. Am. i, 1840, 177, pl. 47.—NUTT. Man. i, 1832, 603.

HAB. Whole of temperate North America, north to Nova Scotia, Severn R., and Alaska; winters in portions of Central and South America.

"SP. CHAR. (No. 18,322, male.) Top of head glossy black, with greenish lustre; back and scapulars similar, but rather duller, and somewhat streaked by the appearance of the white sides of the feathers,—the bases of the feathers, however, being plumbeous. Chin throat, and sides of head, chestnut-brown, this extending round on the nape as a distinct continuous collar, which is bounded posteriorly by dull grayish. The chestnut darkest on the chin, with a rich purplish tinge. Rump above and on sides paler chestnut (sometimes fading into whitish). Upper tail-coverts grayish brown, edged with paler, lighter than the plain brown of the wings and tail. Forehead, for the length of the bill, creamy white, somewhat lunate, or extending in an acute angle, a little over the eye; a very narrow blackish frontlet; loral region dusky to the bill. A patch of glossy black in the lower part of the breast, and a few black feathers in the extreme chin, the latter sometimes scarcely appreciable. Under parts dull white, tinged with reddish gray on the sides and inside of the wings. Feathers of crissum brownish gray, edged with whitish, with a tinge of rufous anteriorly (sometimes almost inappreciable). Nest of mud, lined; built against rocks or beams; opening sometimes circular, on the side; sometimes open above; eggs spotted.

"Total length, 5.10; wing, 4.50; tail, 2.40, nearly even; difference of primary quills, 2.10; length of bill from forehead, .38, from nostril, .25, along gape, .60, width, .50; tarsus, .48; middle toe and claw, .72; claw alone, .22; hind toe and claw, .44; claw alone, .20.

"There is no difference between the sexes, but the young bird is very different from the adult in the following particulars: the steel-blue above is replaced by lustreless dusky-brown, the feathers (except on head) being margined with a creamy tint; the neck merely tinged with rufous; the throat has only a dusky suffusion, and the chin is much mixed with white; the frontal patch is obsolete." (*Hist. N. Am. B.*)

The Eave Swallow, Mud Swallow, or Square-tailed Barn Swallow, as this species is variously known in popular nomenclature is, locally, an abundant bird. Wherever found it occurs in colonies, sometimes comprising a hundred or more pairs, which take possession of the under side of the eaves of some large building—usually a barn or warehouse—attaching their gourd-shaped nests near together, so closely, sometimes, that some are built upon other. When located in towns or their immediate vicinity these colonies suffer much from the persecution of boys who delight to "pelt" the nests with various missiles, which recreation should be abridged by those having the authority, since it is an advantage to any community to have a colony of these insectivorous birds in its neighborhood.

Genus **CHELIDON** Forster.

Chelidon Forst. Synop. Cat. Brit. B. 1817, 55. Type. *Hirundo rustica* Linn.

"Gen. Char. Nostrils lateral. Tarsi short, not exceeding middle toe without its claw; the upper joint covered with feathers, which extend a short distance along the inner face of tarsus. Tail very deeply forked; the lateral feather much attenuated, twice as long as the middle. Basal joint of middle toe free for terminal fourth on outside, for half on inside. Nest partly of mud, and lined with feathers; eggs spotted.

In type, an in American species, the forehead and throat rufous; a black pectoral collar; tail feathers with large light spots on inner webs." (*Hist. N. Am. B.*)

This, the typical genus of the family, has numerous representatives in the Old World, but in America is represented by a single species, the *C. erythrogaster*, or common Barn Swallow, which inhabits the greater portion of both North and South America. The various species are characterized, in addition to the characters of form detailed above, by a distinctive coloration very different from that of the otherwise closely related genera *Tachycineta* and *Callichelidon*, but much resembling that of the species of *Petrochelidon*, from which, however, other characters trenchantly separate them. The allied American genera may be distinguished from *Chelidon* as follows:

Tarsi slightly feathered on inner face at upper end; equal in length to middle toe without claw.

Tail very deeply forked. Plumage beneath rufous, the throtal darker.....*Chelidon*.

Tail slightly forked or emarginate, plumage beneath pure white.....*Tachycineta*.

Tarsi entirely naked, lengthened, equal to middle toe and half its claw.

Tail considerably forked. Plumage beneath pure white.....*Callichelidon**.

Chelidon erythrogaster (Bodd.)

BARN SWALLOW.

Popular synonym. Rufous-bellied Swallow.

Hirundo erythrogaster Bodd. Tabl. P. E. 1783, 45 (based on Pl. Enl. 724, fig. 1).—Baird, Review, 1865, 295.—Coues, B. Col. Val. 1878, 407 (*erythrogastra*); Ridgw. Nom. N. Am. B. 1881, No. 154.

Chelidon erythrogastra Stejneger, Proc. U. S. Nat. Mus. v, 1882, 31.

Hirundo rufa Gmel. S. N. i, 1788, 1018.—Nutt. Man. i, 1832, 601.

Hirundo horreorum Barton, Frag. Nat. Hist. Penn. 1799, 17.—Baird, B. N. Am. 1858, 308; Cat. N. Am. B. 1859, No. 225; Review, 1865, 294.—Coues, Key, 1872, 113; Check List, 1873, No. 111; B. N. W. 1874, 85.—B. B. & R. Hist. N. Am. B. i, 1874, 339, pl. 16, fig. 9.

Hirundo erythrogastra horreorum Coues, 2d Check List, 1882, No. 159.

Hirundo rustica "Linn." Aud. Orn. Biog. ii, 1834, 413, pl. 173; Synop. 1839, 35; B. Am. i, 1840, 181, pl. 48 (*nec* Linn.)

Hirundo americana Wils. Am. Orn. i, 1812, 34, pl. 38, figs. 1, 2.

* *C. cyaneoviridis* Bryant; Baird, Review, 303 (Bahamas).

HAB. Whole of North America (including Greenland and Alaska), and parts of South America; breeds throughout North America, including parts of Mexico; winters in tropical America, including West Indies.

"SP. CHAR. Tail very deeply forked; outer feathers several inches longer than the inner, very narrow towards the end. Above glossy blue, with concealed white in the middle of the back. Throat chestnut; rest of lower part reddish white, not conspicuously different. A steel-blue collar on the upper part of the breast, interrupted in the middle. Tail-feathers with a white spot near the middle, on the inner web. Female with the outer tail-feather not quite so long. Length, 6.90 inches; wing, 5.00; tail, 4.50." (*Hist. N. Am. B.*)

In young birds, the frontal chestnut band is smaller and less distinct. The adult male is more deeply colored beneath than the female.

The common Barn Swallow is so well known that any special account of its habits in this work would be quite superfluous. Its distribution is quite universal, its breeding range including almost the whole continent of North America. In unsettled districts where there are no buildings for its accommodation, it builds in caves or recesses among cliffs. Like all the Swallow tribe, the present species is most beneficial to the farmer, and should be most carefully protected and encouraged.

GENUS **TACHYCINETA** CABANIS.

Tachycineta CAB. MUS. Hein. 1850, 48. Type *Hirundo thalassina* SW.

"GEN. CHAR. Nostrils lateral, overhung or bordered internally by incumbent membrane. Tarsi with the tibial joint covered by overhanging feathers, adherent a short distance along inner face, about equal to middle toe without claw. Lateral toes equal. Adhesion of basal joint of middle toe variable. Tail emarginate only, or slightly forked; fork not exceeding half an inch in depth. Color blue or green above, with or without metallic gloss; with or without white rump. Entirely white beneath. Nests usually in holes of trees or rocks; eggs pure white, unspotted." (*Hist. N. Am. B.*)

Of this section there are two North American species which may be distinguished by the following characters, both being blue or green above and white beneath:

1. **T. bicolor.** Throat feathers white to the base; auriculars wholly dusky. *Adult:* Above, including the auriculars, rich metallic steel-blue, with green reflections. *Young:* Above lustreless sooty-plumbeous.
2. **T. thalassina.** Throat feathers dusky grayish below the surface; auriculars mostly whitish. *Adult male:* Above rich, soft (*not metallic*) dark green (sometimes bronzed over with purple), with a violet collar across the nape; upper tail-coverts mixed with rich violet-purple; sides of the rump with a white patch. *Adult female:* Similar to the male, but duller; crown bronze-gray. *Young:* Similar to that of *bicolor*, except as described above.

T. thalassina is a western species, the range of which extends little if any east of the Rocky Mountains.

Tachycineta bicolor (Vieill.)

WHITE-BELLIED SWALLOW.

Popular synonyms. Black and White Swallow; Green-blue Swallow; Tree Swallow.

Hirundo bicolor VIEILL. Ois. Am. Sept. i, 1807, 61, pl. 31.—AUD. Orn. Biog. i, 1831, 491, pl. 98; Synop. 1839, 35; B. Am. i, 1840, 175, pl. 46.—NUTT. Man. i, 1832, 605.—BAIRD, B. N. Am. 1858, 310; Cat. N. Am. B. 1859, No. 227; Review, 1865, 297.—B. B. & R. Hist. N. Am. B. i, 1874, 344, pl. 16, fig. 8.

Tachycineta bicolor CABAN. 1850.—COUES, Key, 1872, 113 Check List, 1873, No. 112; B. N. W. 1874, 86; B. Col. Val. 1878, 413.—RIDGW. Nom. N. Am. B. 1881, No. 155.

Iridoprocne bicolor COUES, 2d Check List, 1882, No. 160.

Hirundo viridis WILS. Am. Orn. v, 1812, 49, pl. 38, fig. 2.

HAB. Whole of temperate North America, breeding from table-lands of Mexico to Alaska and Great Slave Lake; wintering in southern United States, Cuba, Mexico, and Guatemala; Bermudas.

"SP. CHAR. Glossy metallic bluish green above; entirely white beneath. *Female* duller in color. Length, 6.25 inches; wing, 5.00; tail, 2.65.

"*Young bird* dull sooty gray above, much like that of *H. thalassina;* but may readily be distinguished by the feathers of the throat being pure white to their roots, instead of having the concealed bases grayish as in that species." (*Hist. N. Am. B.*)

The White-bellied Swallow is an abundant species where there are suitable places for the location of its nests. Some years ago there were many large dead stumps standing in the water in a stagnant pond connected with the Wabash River immediately above the dam at the Grand Rapids, near Mount Carmel. This pond consisted of "back water" resulting from the building of the dam, and the dead stumps were presumably the remnants of trees that had been killed by flooding, since they grew so thickly as to leave no doubt of their having once formed part of the adjacent forest. These dead stumps and "snags" were perforated by countless woodpecker holes, and in these the White-bellied Swallows had their nests, as did also many pairs of Carolina Chickadees and Prothonotary Warblers. The Swallows were most numerous, however, there being perhaps more than fifty pairs nesting there. In some old elm trees, with dead tops, growing on the "commons" at Mount Carmel, there were also, formerly, several pairs nesting.

Regarding this species in Cook county, Mr. Nelson gives us the following information on page 102 of his list:

"Common resident. Arrives in large numbers March 20th. The first of May only residents remain. Departs in September. This species still keeps its primitive habit of nesting in deserted woodpeckers' holes, hollow stumps, and similar places, generally close

to some stream or body of water. Several times during the spring I have seen these birds occupy martin houses for several weeks, until the owners returned, when, after a desperate battle, they would leave. Have never observed them about the town during the breeding season."

GENUS CLIVICOLA FORSTER.

Clivicola FORSTER, Syn. Br. B. 1817, 55. Type, *Hirundo riparia* LINN.
Cotile BOIE, Isis, 1822, 550. Same type.

"GEN. CHAR. Bill small; nostrils lateral, overhung by a straight-edged membrane. Tarsus about equal to middle toe without claw; feathered at upper end, especially on inner face, and having also a small tuft of feathers attached to posterior edge near the hind toe. Middle toe with basal joint adherent externally to near the end, half-way internally, the claws comparatively little curved, the lateral reaching beyond the base of the middle. Tail slightly forked. Color dull lustreless brown above, in *riparia* white beneath with gray pectoral band. Nests in holes in banks; eggs white." (*Hist. N. Am. B.*)

Birds of the genus *Clivicola* resemble in general appearance and habits those of the genus *Stelgidopteryx*, but may always be distinguished by the small tuft of feathers growing from the lower portion of the posterior face of the tarsus. There are also other characters, which, however, have been sufficiently mentioned on page 204.

Clivicola riparia (Linn.)

BANK SWALLOW.

Popular synonyms. Sand Martin; Sand Swallow.

Hirundo riparia LINN. S. N. ed. 10, i, 1758, 192.—WILS. Am. Orn. v, 1812, 46, pl. 38, fig. 4.—NUTT. Man. i, 1832, 607.—AUD. Orn. Biog. iv, 1838, 584, pl. 385; Synop. 1839, 36; B. Am. i, 1840, 187, pl. 50.

Cotile riparia BOIE, Isis, 1822, 550.—RIDGW. Nom. N. Am. B. 1881, No. 157.—COUES, 2d Check List, 1882, No. 163.

Cotyle riparia BOIE, 1826.—BAIRD, B. N. Am. 1858, 313; Cat. N. Am. B. 1859, No. 229; Review, 1865, 319.—COUES, Key, 1872, 114; Check List, 1773, No. 115; B. N. W. 1874, 89; B. Col. Val. 1878, 435.—B. B. & R. Hist. N. Am. B. i, 1874, 333, pl. 16, fig. 14.

Clivicola riparia STEJNEGER, Proc. U. S. Nat. Mus. 1882, 32.

HAB. Northern Hemisphere in general; in America, south to Brazil, and throughout West Indies, but breeding chiefly in the United States and northward; winters chiefly south of the United States.

"SP. CHAR. *Adult.* Above grayish brown, somewhat fuliginous, with a tendency to paler margins of the feathers. Beneath pure white, with a band across the breast and the sides of the body like the back. Length, 4.75; wing, 4.00; tail, 2.00

"Young birds have less emarginate tails, and the feathers of back, rump, and wings edged with whitish." (*Hist. N. Am. B.*)

A young specimen, full-fledged, in the collection of Mr. H. K. Coale, of Chicago, is apparently referable to this species, but differs quite markedly from any other example I have seen. The most conspicuous feature is the decided and quite uniform buff tinge to the whole throat, except along its posterior border, which calls to mind several Central and South American species of *Stelgidopteryx* (as *S. ruficollis*, *S. uropygialis*, etc.); the shade of the buff is lighter however, while the rest of the plumage is altogether different. The brownish gray pectoral band is wider and darker than usual, while the upper parts are a shade or so darker than in the average. Another very curious difference from the ordinary style of *C. riparia* consists in the deep rufous-buff terminal margins of the wing-coverts, tertials, upper tail-coverts, and feathers of the rump, these markings being grayish or yellowish white in all other specimens I have seen. The measurements are as follows: Wing, 3.60; tail, 2.00. It is evidently not full grown. The specimen was taken at Riverdale, near Chicago, Illinois, July 4, 1877.

The distribution of the Bank Swallow within the limits of the State may be said to be very general, and it is also one of the most abundant species, occurring in colonies of greater or less extent wherever there are sand- or soft earth-banks in the vicinity of water. It not unfrequently nests in the immediate vicinity of colonies of the Rough-winged Swallow, and at Mount Carmel I have found both species not only nesting in the same ravines, but apparently mingling together in perfect harmony.

Genus **STELGIDOPTERYX** Baird.

Stelgidopteryx Baird, Birds N. Am. 1858, 312. Type, *Hirundo serripennis* Aud.

"Gen. Char. Bill rather small; nostrils oval, superior, margined behind, but scarcely laterally, by membrane, but not at all overhung; the axes of the outline converging. Frontal feathers soft, and, like chin, without bristles. Tarsi equal to middle toe without claw; the upper end covered with feathers all round, none at lower end. Basal joint of middle toe adherent externally nearly to end; internally, scarcely half. Lateral toes about equal, their claws not reaching beyond base of middle claw. Tail slightly emarginate; the feathers broad, and obliquely rounded at end. Edge of the wing rough to the touch; the shafts of the fibrillæ of outer web of outer primary prolonged and bent at right angles into a short stiff hook. Nest (of *S. serripennis*) in holes in banks; eggs pure white, unspotted.

"Color dull brown above." (*Hist. N. Am. B.*)

"The birds of this genus have usually been referred to *Cotyle*, which, however, they resemble, only in color. The nostrils are ex-

posed, instead of being overhung; the tarsus is bare below, not feathered, and the lateral claws are considerably curved, and not reaching beyond the base of the lateral, as in *Cotyle*. The structure of the wing is very different." (BAIRD.)

The chief peculiarity of this genus consists in the remarkable roughness of the edge of the wing, said to occur also in *Psalidoprocne* CAB., an African genus. This characterizes only the adult male and older females, the young and many adult females having the web of the outer primary soft, as in other swallows.

Stelgidopteryx serripennis (Aud.)

ROUGH-WINGED SWALLOW.

Popular synonyms. Rough-winged Bank Swallow, or Sand Martin; Bridge Swallow.

Hirundo serripennis AUD. Orn. Biog. iv, 1838, 593; Synop. 1839, 37; B. Am. i, 1840, 193, pl. 51.
Cotyle serripennis BOIE, 1814.—BAIRD, B. N. Am. 1858, 313; Cat. N. Am. B. 1859 No. 230.
Stelgidopteryx serripennis BAIRD, Review, 1865, 314.—COUES, Key, 1872, 114; Check List, 1873 No. 116; 2d ed. 1882, No. 164; B. N. W. 1874, 90; B. Col. Val. 1878, 438.—B. B. & R. Hist. N. Am. B. i, 1874, 350, pl. 16, fig. 12.—RIDGW. Nom. Am. B. 1881, No. 158.

HAB. Whole of United States, except extreme northern border, and New England east of the Connecticut Valley; northwest to British Columbia; wintering in Mexico and Guatemala.

"SP. CHAR. (No. 32,269, male.) Above smoky brown, rather deeper on the head, perhaps a little paler on the rump. Larger quills and tail-feathers dusky brown; the secondaries and greater coverts sometimes lighter along their external edges. The under parts (for about half the total length) from bill to and including breast, with the sides of body and lining of wings, mouse-gray, rather lighter along the throat; the rest of under parts, including crissum, white, the latter with the shafts sometimes dusky, and very rarely with dusky blotches at the ends of the longer feathers.

"Young birds (as in 1,120) differ in a tinge of reddish fulvous on the upper parts; the wing-coverts, secondaries, and inner primaries margined more or less broadly with a brighter shade of the same. The gray of the under parts is also washed with this color, especially on the chin and across the breast. The hooks of the edge of the wing have not yet become developed.

"(No. 32 269, male, fresh specimen before being skinned.) Total length, 5.40; expanse of wings, 12.20; wing from carpal joint, 4.50.

"(No. 32,269, male, prepared specimen.) Total length, 5.20; wing, 4.50; tail, 2.25; depth of fork, .15; difference of primaries, 2.28; length of bill from forehead, .40, from nostril, .24, along gape, .56, width of gape, .43; tarsus, 45; middle toe and claw, .57; claw alone, .19; hind toe and claw, .41; claw alone, .16." (*Hist. N. Am. B.*)

In its general appearance as well as in habits, the Rough-winged resembles so closely the Bank Swallow as to be not easily distinguished by the casual observer. It nests, like the latter species, in holes dug into the banks of streams or ravines, usually, however, in colonies by themselves, though not unfrequently mingling with

the other, pairs of the two sometimes occupying adjacent burrows. The Rough-winged Swallow, however, sometimes nests in holes in the abutment of bridges or even in cavities among the timbers,—a habit which the Bank Swallow has not been observed to have acquired.

By the careful observer the Rough-winged Swallow may be immediately distinguished from the Sand Martin (*C. riparia*) by the uniform "mouse-gray" or grayish brown color of the under parts, *gradually* passing into white on the under tail-coverts, the lower surface of the Bank Swallow being pure white, with a distinct band of grayish brown across the breast.

Family TANAGRIDÆ.—The Tanagers.

This beautiful group of birds, the essential characters of which are given on page 48, is represented within the United States by only five species, one of them being somewhat doubtful as a member of our fauna; but in Tropical America, Tanagers form one of the principal elements of a bird-fauna, which for variety has no parallel in any other part of the world. It may interest the reader to know that the five families of Neotropical birds which are represented by the greatest number of species are *absolutely peculiar to America*, these families being the Tanagers (*Tanagridæ*), Tyrant Flycatchers (*Tyrannidæ*), Wood-hewers (*Dendrocolaptidæ*), Ant Thrushes (*Formicariidæ*), and Humming-birds (*Trochilidæ*). None of these families have even true representatives in any part of the Old World, the Sun-birds (*Nectaridiidæ*), which some have considered as representing the Humming-birds, belonging to even a different order (*Passeres*). There are besides those named above, many families of birds, remarkable for brilliant coloring or other characteristics, which are absolutely peculiar to the Neotropical Region; prominent examples being the Honey Creepers (*Cærebidæ*), Manakins (*Pipridæ*), Cotingas (*Cotingidæ*), Puff-birds (*Bucconidæ*), Jacamars (*Galbulidæ*), and Toucans (*Ramphastidæ*). In number of species the Humming-birds take the first rank, with nearly 450 known species, while the Tanagers follow soon after, with about 380 species, or nearly as many kinds as are included in the entire land-bird fauna of North America! With such a multitudinous host ranged under two families alone, the statement seems less remarkable that the grand total of Tropical American birds is something like 4,000 species, or about one third of all that are known!

In comparison with such boundless wealth of bird-life, the meagre *Ornis* of our northern continent must seem a well-tilled, if not worn-out, field; but notwithstanding its comparative sterility, and long cultivation, by numerous devotees, there are more things yet to be learned than can be discovered in the life-time of any man.

The single genus of Tanagridæ, which properly finds a place in this work, is one of the most typical of the whole family, and includes two of our most brilliant songsters.

Genus **PIRANGA** Vieillot.

Piranga Vieill. Ois. Am. Sept. i, 1807, iv. Type, *Muscicapa rubra* Linn.

Gen. Char. Bill sub-conical and rather cylindrical, the culmen moderately curved, especially toward the tip; maxillary tomium distinctly notched near the tip, and often with a more or less distinct tooth near the middle. Wings rather long (decidedly longer than the tail); primaries nine, the four outer ones longest. Tail moderate, distinctly emarginate; tarsus rather short (about equal to or but little longer than the culmen), the middle toe shorter, or about equal to the length of the bill from the nostril to the tip. Colors chiefly or partly bright red in the adult male, olive-greenish above and yellowish below in the female.

The three species occurring in eastern North America (one of them an accidental straggler from the West), may be distinguished as follows:

A. Wings without distinct light bands or other markings; adult males with entire body red.

1. **P. rubra.** *Adult male:* Vermilion-red, the wings and tail similar but, with other upper parts, duller than the lower parts. *Adult female:* Ochraceous olive above, ochraceous yellow beneath; sometimes tinged, both above and below, with dull red. *Young male:* Like the female, but more or less patched with red, according to age.
2. **P. erythromelas.** *Adult male:* Rich scarlet, with deep black wings and tail; the former sometimes with red on the wing-coverts. *Adult female:* Above grayish olive-green, beneath light greenish yellow. *Young male:* Similar to the female, but (except in first plumage) with black wings and tail, the red appearing in patches with advancing age.

B. Wings with two light yellowish bands.

3. **P. ludoviciana.** *Adult male:* Back, wings, and tail black, the wings with two yellow bands; rest of plumage gamboge-yellow, the head red (varying from orange-red to crimson). *Adult female:* Wings and tail dusky grayish, the wing-bands less distinct; back grayish, or olive-green; lower parts greenish yellow; head greenish above, yellowish beneath. *Young male:* Similar to female, but the wings and tail darker, the rest of the plumage deeper yellowish, and head more or less tinged with red.

Piranga erythromelas Vieill.

SCARLET TANAGER

Popular synonym. Black-winged Redbird.

Tanagra rubra Linn. S. N. ed. 12, i, 1766, 314 (*nec.* ed. 10, i, 1758, 181).—Wils. Am. Orn. ii, 1810, 42, pl. 11, figs. 3, 4.—Nutt. Man. i, 1832, 465.—Aud. Orn. Biog. iv, 1838, 388, pl. 354. figs. 3, 4.

Piranga rubra Vieill. Ois. Am. Sept. i, 1807, iv, pl. 1, fig. 12.

Pyranga rubra Sw. & Rich. F. B. A. ii, 1831, 273.—Aud. Synop. 1839, 136; B. Am. iii, 1841, 226, pl. 209.—Baird, B. N. Am. 1858, 39; Cat. N. Am. B. 1869, No. 220.—Coues, Key, 1872, 111; Check List, 1873, No. 107; 2d ed. 1882, No. 154; B. N. W. 1874, 82; B. Col. Val. 1878, 350.—B. B. & R. Hist. N. Am. B. i, 1874, 435, pl. 20, figs. 7, 8.—Ridgw. Nom. N. Am. B. 1881, No. 161.

Piranga erythromelas Vieill. Nouv. Dict. & Hist. Nat. xxviii, 1819, 293.

Hab. Eastern United States, breeding chiefly northward; north to Lake Winnipeg, in the interior; wintering in Cuba, Jamaica, Barbadoes, and the whole of Middle America (except western Mexico), and south to Trinidad and Ecuador.

"Sp. Char. Bill shorter than the head. Second quill longest; first and third a little shorter. Tail moderately forked. *Male.* Whole head and body continuous, pure, intense scarlet, the feathers white beneath the surface, and grayish at the roots. Wings and tail, with the scapulars, uniform intense black; the middle-coverts sometimes partly red, forming an interrupted band. Lining of wing white. A blackish tinge along sides of the rump, concealed by wings. Bill pea-green; iris brown; tarsi and toes dull blue. *Female.* Olive-green above, yellowish beneath. Wing and tail-feathers brown, edged with olivaceous. Length, 7.40; wing, 4.00; tail, 3.00."

"At least three years seem to be required for the assumption of the perfect plumage of the male. In the first year the young male is like the female, but has black wings and tail: in the fall red feathers begin to make their appearance, and the following spring the red predominates in patches." (*Hist. N. Am. B.*)

By far the most showy of our birds, the adult male of the Scarlet Tanager is a most brilliant creature when seen among the bright green foliage, which so effectively complements the glowing scarlet and velvety black of his plumage.

In the southern half of Illinois, the Scarlet Tanager, while not an uncommon summer resident in some localities, is decidedly a less abundant bird than his plainer but more musical relative, the Summer Redbird. He is also much more retired in his habits, preferring the high timber of the bottom lands to the upland woods, and therefore not brought so much in contact with the abodes of men.

The song of this bird resembles somewhat that of the Robin in its modulation, but is shriller in tone, more hurried, and enunciated with a peculiar wavering style. The ordinary note, uttered by both sexes, sounds like *chip-a-raree*, uttered with considerable emphasis when the nest or young are disturbed.

The nest of the Scarlet Tanager is placed near the end of a horizontal branch of a tree, usually an oak or hickory, twenty feet or more from the ground, and is a very thin and shallow, though by no means frail, structure, composed of wiry grasses, fine roots, etc., so loosely interwoven that the eggs may frequently be seen through the interstices from below. The eggs are three to five in number, light greenish blue, speckled, chiefly round the larger end, with various shades of brown.

Piranga rubra (Linn.)

SUMMER TANAGER.

Popular synonyms. Vermilion Tanager; Red Tanager; Red Bee-bird; Summer Redbird.

Fringilla rubra Linn. S. N. ed. 10, i, 1758, 181.
Muscicapa rubra Linn. S. N. ed. 12, i, 1766, 326.
Piranga rubra Vieill. Ois. Am. Sept. i, 1807, p. iv.
Tanagra æstiva Gmel. S. N. i, 1788, 889.—Wils. Am. Orn. i, 95, pl. 6, fig. 3.—Nutt. Man. i, 1 32, 469.—Aud. Orn. Biog. i, 1831, 232; v, 1839, 518, pl. 44.
Pyranga æstiva Vieill. 1819.—Aud. Synop. 1839, 136; B. Am. iii, 1831, 222, pl. 208.—Baird, B. N. Am. 1858; 301; Cat. N. Am. B. 1859, No. 221.—Coues, Key, 1872, 111; Check List 1873, No. 108; 2d ed. 1882, No. 155; B. N. W. 1874, 82; B. Col. Val. 1878, 352.—B. B. & R. Hist. N. Am. B. i, 1874, 441, pl. 20, figs. 5, 6 ("var. *æstiva*").—Ridgw. Nom. N. Am. B. 1881, No. 164.
Tanagra coccinea Bodd. Tabl. P. E. 1783, 46 (ex. Pl. Enl. 741).

Hab. Eastern United States, northeast to Connecticut Valley, or, casually, even to Nova Scotia, but abundant only south of 40°, breeding throughout its United States range; wintering in middle America and northern South America, as far as Ecuador and Peru; Cuba; Jamaica. (Replaced in southwestern United States and western Mexico by *P. rubra cooperi*.)

Sp. Char. Bill nearly as long as the head, without any median tooth. Tail nearly even, or slightly rounded. *Adult male.* Rich vermilion-red, the upper parts duller and darker. Bill (in fresh specimens), varying from light pinkish, more salmon-colored on mandible and darker on culmen, to wax-yellow, the maxilla more olive, with darker culmen; iris brown; feet lilac-gray. *Adult female.* Yellowish olive above, light ochrey yellow beneath. Bill, etc., as in the male. Total length, 7.45–7.95; extent, 11.50–12.25; wing, 3.70–3.95; tail, 2.90–3.15.

The male requires several years to attain the full plumage, immature individuals showing a mixture of red and yellow, in relative proportions according to the age. Some females show more or less of red, one (No. 82,216, U. S. Nat. Mus.) shot at Wheatland, Indiana, May 21, 1881, having the plumage more than one half red, the red color being of greater extent, in fact, than on the male, which was killed by the same shot! The tint of the red is very peculiar, however, being of dull Chinese orange, instead of pure rosy vermilion, as in the male.

In at least the southern half of Illinois the Summer Redbird is an abundant species in dry upland woods. It is moreover a very familiar species, nesting habitually in trees along the roadside and even in the midst of towns. For this reason it is much more frequently seen than the Scarlet Tanager, of which it is supposed by many people to be a variety or special plumage. Besides being a more abundant and familiar species, its notes are much louder. The ordinary one sounds like *pa-chip-it-tut-tut-tut*, or, as Wilson expresses it, *chicky-chucky-chuck*. The song resembles in its general

character, that of the Scarlet Tanager, but is far louder, better sustained, and more musical. It equals in strength that of the Robin, but is uttered more hurriedly, is more "wiry," and much more continued.

The food of this bird consists to a great extent of hornets, wasps, and bees, on which account it is to a greater or less extent known to farmers as the "Red Bee-bird."

The nest is usually placed near the extremity of a horizontal branch of an oak tree (preferably a white or post oak), alongside the edge of a wood, trees standing by a roadside being frequently selected. The height at which it is placed varies, usually from twelve to twenty feet above the ground, although the writer found one which was not more than four and a half feet, and another which was nearly thirty feet up. Its average elevation is such that a man standing upon the seat of a wagon could easily reach, either with his hand or whip, the majority of them. The nest is a thin and shallow but very firm structure, composed of loosely interwoven wiry grass-stems, often with the seed panicles attached, and is so thin that the eggs can almost always be seen by one standing underneath the nest. The eggs are usually three in number, and are similar in color and markings to those of the Scarlet Tanager, but somewhat larger.

In the extreme northern portion of the State, according to Mr. Nelson, it is "a rare summer visitant," there being "but few records of its occurrence."

At Mount Carmel the dates of arrival noted by me were April 20 to 29, and at Wheatland, Indiana, April 18 to 23. At the latter place a specimen was seen October 10, 1882, which is the latest date of its stay that I have recorded.

Family FRINGILLIDÆ.—The Finches.

"Char. Primaries nine. Bill very short, abruptly conical, and robust. Commissure strongly angulated at base of bill. Tarsi scutellate anteriorly, but the sides with two undivided plates meeting behind along the median line, as a sharp posterior ridge. Eyes hazel or brown, except in *Pipilo* where they are reddish or yellowish. Nest and eggs very variable as to character and situation.

"All the United States species may be provisionally divided into four subfamilies (the European House-Sparrow forming a fifth), briefly characterizable as follows:

"**Coccothraustinæ.** Bill variable, from enormously large to quite small; the base of the upper mandible always provided with a close-pressed fringe of bristly feathers (more or less conspicuous) concealing the nostrils. Wings very long and pointed, usually one half to one third longer than the forked or emarginate tail. Tarsi short.

"**Pyrgitinæ** [=**Passerinæ**]. Bill robust, swollen, arched above, without distinct ridge. Lower mandible at base narrower than upper. Nostrils covered; side of maxilla with stiff appressed bristles. Tarsi short, not longer than middle toe. Tail shorter than the somewhat pointed wings. Back streaked; under parts not streaked.

"**Spizellinæ.** Embracing all the plain-colored sparrow-like species marked with longitudinal stripes. Bill conical, always rather small; both mandibles about equal. Tarsi lengthened. Wings and tail variable. Lateral claws never reaching beyond the base of the middle claw.

"**Passerellinæ.** Sparrow-like species, with triangular spots beneath. Legs, toes, and claws very stout; the lateral claws reaching nearly to the end of the middle ones.

"**Spizinæ.** Brightly colored species, usually without streaks. Bill usually very large and much curved; lower mandible wider than the upper. Wings moderately long. Tail variable." (*Hist. N. Am. B.*)

Subfamily COCCOTHRAUSTINÆ.—The True Finches.

"Char. Wings very long and much pointed; generally one third longer than the more or less forked tail; first quill usually nearly as long as or longer than the second. Tertiaries but little longer, or equal to the secondaries, and always much exceeded by the primaries. Bill very variable in shape and size, the upper mandible, however, as broad as the lower; nostrils rather more lateral than usual; and always more or less concealed by a series of small bristly feathers applied along the base of the upper mandible; no bristles at the base of the bill. Feet short and rather week. Hind claw usually considerably longer than the middle anterior one; sometimes nearly the same size.

"In the preceding diagnosis I have combined a number of forms, all agreeing in the length and acuteness of the wing, the bristly feathers along the base of the bill, the absence of conspicuous bristles on the sides of the mouth, and the shortness of the feet. They are all strongly marked and brightly colored birds, and usually belong to the more northern regions.

"The bill is very variable, even in the same genus, and its shape is to a considerable extent of specific rather than of generic importance. The fringe of short bristles along the base of the bill, concealing the nostrils, is not appreciable in *Plectrophanes* [=*Plectrophenax*] (except in *P. nivalis*), but the other characteristics given above are all present." (*Hist. N. Am. B.*)

Genera.

A. Bill enormously large and stout; the lateral outline as long as that of the skull. Culmen gently curved.

Colors greenish, yellow, and black.

Coccothraustes. First quill equal to the second. Wings one half longer than the tail. Lateral claws equal, reaching to the base of the middle claw. Claws much curved, obtuse; hinder one but little longer than the middle.

B. Bill smaller, with the culmen more or less curved; the lateral outline not so long as the skull. Wings about one third longer than the tail, or a little more; first quill shorter than the second. Claws considerably curved and thickened; hinder most so, and almost inappreciably longer or even shorter than the middle anterior one. Tarsus shorter than the middle toes. Lateral toes unequal.

a. Colors plain gray and black, never streaked; breast red in the male of some species.

Pyrrhula. Bill excessively swollen; as broad and as high as long, not half length of head; upper outline much curved. Tail-coverts covering two thirds the tail, which is nearly even; middle and hinder claws about equal.

b. Colors reddish in the male, plain grayish or streaked brown and white in the female.

Pinicola. Bill moderately swollen; longer than high or broad, upper outlines much curved; the tip hooked. Tail-coverts reaching over basal half of tail, which is nearly even. Middle claw longer than the hind; outer lateral claw extending beyond base of middle (reaching to it in *Pyrrhula* and *Carpodacus*). *Female* and *young* not streaked.

Carpodacus. Bill variable, always more or less curved and swollen; longer than high or broad; the tip not hooked. Tail-coverts reaching over two thirds the tail, which is decidedly forked. Middle and hind claw about equal. *Female* and *young* streaked.

c. Colors black and and yellow in the male.

Spinus. Bill nearly straight. Hind claw stouter and more curved, but scarcely longer than the middle anterior one. Outer lateral toe reaching a little beyond the base of the middle claw; shorter than the hind toe. Wings longer and more pointed. Tail quite deeply forked.

C. Hind claw considerably longer than the middle anterior one, with about the same curvature; claws attenuated towards the point, and acute. Lateral toes about equal. Wings usually almost one half longer than the tail, which is deeply forked. Tarsus shorter than middle toe.

a. Points of mandibles overlapping.

Loxia. Tarsus shorter than the middle toe. Bill much compressed, the mandibles falcate, with the points crossing like the blades of scissors. Claws very large; lateral extending beyond the base of the middle. Colors red or gray, streaked in young.

b. Points of mandibles not overlapping.

Acanthis. Tarsus equal to the middle toe. Bill very acutely conical; outlines and commissure perfectly straight. Lateral toes reaching beyond the base of the middle one. No ridge on the side of the lower mandible. Streaked; a crimson crown (except in one species).

Leucosticte. Culmen slightly decurved; commissure a little concave. Bill obtusely conical; not sharp-pointed. A conspicuous ridge on the side of the lower mandible. Claws large; the lateral not reaching beyond the base of the middle one. Colors red and brown.

D. Hind claw much the largest; decidedly less curved than the middle anterior one. Tarsus longer than the middle toe. Lateral toes equal; reaching about to the base of the middle claw. Hind toe as long as or longer than the middle one. Bill very variable; always more or less curved and blunted. Palate somewhat tuberculate; margins of lower jaw much inflexed. Tail slightly emarginate or even. Wings one half longer than the tail. First quill as long as the second.

Plectrophenax. Angle of gonys opposite middle of culmen, the gonys greatly ascending. Maxilla shallower than mandible. Middle toe and claw about equal to tarsus, the claw reaching beyond that of the hallux. Secondaries mostly white.

Calcarius. Bill much as in *Plectrophenax*. Middle toe and claw shorter than tarsus, the claw not reaching as far as to the tip of the hind claw. No white on secondaries.

Rhynchophanes. Bill very stout, conical, the angle of the gonys decidedly posterior to the middle of the bill, the maxilla equal in depth to the mandible.

Genus COCCOTHRAUSTES Brisson.

Coccothraustes Briss. Orn. iii, 1760, 218. Type, *Loxia coccothraustes* Linn.

Subgenus Hesperiphona Bonaparte.

Hesperiphona Bonap. Comptes Rendus, xxxi, Sept. 1850, 424. Type, *Fringilla vespertina* Coop.

"Gen. Char. Bill largest and stoutest of all the United States fringilline birds. Upper mandible much vaulted; culmen nearly straight, but arched toward the tip; commissure concave. Lower jaw very large, but not broader than the upper, nor extending back, as in *Guiraca*; considerably lower than the upper jaw. Gonys unusually long. Feet short; tarsus less than the middle toe; lateral toes nearly equal, and reaching to the base of the middle claw. Claws much curved, stout and compressed. Wings very long and pointed, reaching beyond the middle of the tail. Primaries much longer than the nearly equal secondaries and tertials; outer two quills longest; the others rapidly graduated. Tail slightly forked; scarcely more than two thirds the length of the wings, its coverts covering nearly three fourths of its extent. Nest and eggs unknown." (*Hist. N. Am. B.*)

Coccothraustes vespertinus (Coop.)

EVENING GROSBEAK.

Fringilla vespertina Cooper. Ann. Lyc. N. Y. i, 1825, 220.—Nutt. Man. i, 1832, 594.—Aud. Orn. Biog. iv, 1839, 515; v, 1839, 235, pls. 373, 425.

Coccothraustes vespertina Sw. & Rich. F. B. A. ii, 1831, 269, pl. 68.—Aud. Synop. 1839, 134; B. Am. iii, 1841, 217, pl. 207.

Hesperiphona vespertina Bonap. 1850.—Baird, B. N. Am. 1858, 409; Cat. N. Am. B. 1859, No. 302.—Coues, Key, 1872, 127; Check List, 1873, No. 136; 2d ed. 1882, No. 189; B. N. W. 1874, 105.—B. B. & R. Hist. N. Am. B. i, 1875, 449, pl. 22, fig. 1.—Ridgw. Nom. N. Am. B. 1881, No. 165.

Hab. Western North American, south, in mountain districts, to elevated regions of eastern Mexico; north to the Saskatchewan, and east, especially in winter, to the Great Lakes; accidental in northern Atlantic States (New York, Ohio, etc.).

"Sp. Char. Bill yellowish green, dusky at the base. Anterior half of the body dusky yellowish olive, shading into yellow to the rump above, and the under tail-coverts below. Outer scapulars, a broad frontal band continued on each side over the eye, axillaries, and middle of under wing-coverts yellow. Feathers along the extreme base of the bill, the crown, tibiæ, wings, upper tail-coverts, and tail black; inner greater wing-coverts and tertiaries white. Length, 7.30; wing, 4.30; tail 2.75.

"The female differs in having the head of a dull olivaceous brown, which color also glosses the back. The yellow of the rump and other parts is replaced by a yellowish ash. The upper tail-coverts are spotted with white. The white of the wing is much restricted. There is an obscure blackish line on each side of the chin." (*Hist. N. Am. B.*)

Young male, nearly adult. Generally similar to adult male, but tertials having inner webs entirely dusky and grayish, the lower webs grayish next the shaft; inner greater coverts pale yellow; deeper on edges; upper tail-coverts tipped with dingy yellow, and inner webs of tail-feathers indistinctly tipped with grayish, passing into whitish terminally. Back and jugulum mixed with feathers of an olivaceous yellow. (Male, Santa Cruz, Cal., March, 1876; Coll. E. W. Nelson.)

This beautiful bird is a winter visitant to the more northern portions of the State, its appearance being, however, very irregular, as is that of the Bohemian Wax-wing (*Ampelis garrulus*). Mr. Nelson says that it is "a winter visitant occuring at irregular intervals. The winter of 1871 they were quite common throughout the northern portion of the State. The following winter they were much rarer, and since then but very few have been seen. I am told that formerly it was fo much more regular occurrence." (*Bull. Essex Inst.*, Vol. VIII., 1876, p. 104.)

The most southern record for this State appears to be that by Mr. O. P. Hay, in the "Nuttall Bulletin" for July, 1881, page 179, which reads as follows:

"The Evening Grosbeak has for its habitat the region extending from the Plains to the Pacific Ocean, and from Mexico into British America. Toward the north it ranges further to the east; so that, while it appears to be not uncommon about Lake Superior, it has been reported as occurring in Ohio, New York, and Canada. In Illinois it was observed at Freeport during the winter of 1870-71; and at Waukegan during January, 1873. (*Hist. N. A. Birds* by Baird, Brewer, and Ridgway.) Mr. Robt. Ridgway in his recently issued 'Catalogue of the Birds of Illinois,' states that it is 'a winter visitant to the extreme northern counties of the State'.

"It will, therefore, be a matter of interest to ornithologists to learn that this exquisite bird is sometimes found further south and at a less advanced season of the year. About the year 1872, while hunting during the fine autumn weather, in the woods about Eureka, Illinois, I fell in with a flock of these Grosbeaks, and succeeded in killing six of their number. They were feeding in the tree tops on the seeds of the sugar maple, just then ripening, and were excessively fat. They were very unsuspicious, and for a long time appeared to be incapable of realizing the havoc that I was making in their ranks, as they tarried in the neighboring boughs and uttered their call-notes to summon their missing companions. As the skins of these birds afterward passed out of my hands, I can not now give with certainty the year of their capture. Eureka is in Woodford county, and one hundred and twenty miles nearly due south of Freeport. It is about the same distance south of Waukegan."

According to Mr. Thos. H. Douglas, of Waukegan (in letter dated January 2, 1882), "these birds, when shot at, will fly into the nearest large evergreens, where they sit perfectly still, and are very hard to be seen, but after a few moments they begin to call and can easily be discovered. I have repeatedly shot two or more out of the same tree. They feed on the seeds of evergreens and sugar-maple buds. Have known them to stay until May, when they ate the buds of black ash and cottonwood. They were feeding on the latter in company with the Rose-breasted Grosbeak. I think we will get some this winter, as there are very few evergreens seeding north of us, and what are, are mostly *blind* seeds. I had one slightly wounded in a cage for several days in the green-house, where it got to be very tame, and seemed to prefer hemp seed to any other kind, although I tried it with about a dozen kinds of evergreen seeds."

Genus **PINICOLA** Vieillot.

Pinicola Vieill. Ois. Am. Sept. i, 1807, 4, pl. 1, fig. 13.

"Char. Bill short, nearly as high as long; upper outline much curved from the base; the margins of the mandibles rounded; the commissure gently concave, and abruptly deflexed at the tip; base of the upper mandible much concealed by the bristly feathers covering the basal third. Tarsus rather shorter than the middle toe; lateral toes short, but their long claws reach the base of the middle one, which is longer than the hind claw. Wings moderate; the first quill rather shorter than the second, third, and fourth. Tail rather shorter than the wings; nearly even." (*Hist. N. Am. B.*)

Pinicola enucleator (Linn.)

PINE GROSBEAK.

Loxia enucleator Linn. S. N. ed. 10, i, 1758, 171.—Wils. Am. Orn. i, 1808, 80, pl. 5, fig. 2.
Corythus enucleator Cuvier.—Aud. Synop. 1839, 127; B. Am. iii, 1841, 179, pl. 199.
Pyrrhula enucleator Bonap. 1828.—Nutt. Man. i, 1832, 535.—Aud. Orn. Biog. iv, 1838, 414, pl. 358.
Pyrrhula (Corythus) enucleator Sw. & Rich. F. B. A. ii, 1831, 262, pl. 53.
Pinicola enucleator Cab. 1851.—Coues, Key, 1872, 127; Check List, 1873, No. 137; 2d ed. 1882, No. 190; B. N. W. 1874, 104.—B. B. & R. Hist. N. Am. B. i, 1874, 453, pl. 21, figs. 1, 2. Ridgw. Nom. N. Am. B. 1881, No. 166.
Pinicola canadensis ("Brehm") Caban. Mus. Hein. i, 1851, 167 (ex. *Corythus canadensis* Brehm).—Baird, B. N. Am. 1858, 410; Cat. N. Am. B. 1859, No. 304.

Hab. Northern coniferous forests of Northern Hemisphere; in North America, breeding far south (to at least 38°) in higher western mountains, and in winter migrating south to or beyond 40°, in Eastern Province.

"Sp. Char. Bill and legs black. *Male.* General color light carmine-red or rose, not continuous above, however, except on the head; the feathers showing brownish centres on the back, where, too, the red is darker. Loral region, base of lower jaw all round, sides (under the wing), abdomen, and posterior part of the body, with under tail-coverts, ashy, whitest behind. Wing with two white bands across the tips of the greater and middle coverts; the outer edges of the quills also white, broadest on the tertiaries, on secondaries tinged with red. *Female* ashy, brownish above, tinged with greenish yellow beneath; top of head, rump, and upper tail-coverts brownish gamboge-yellow. Wings much as in the male. Length about 8.50; wing, 4.50; tail, 4.00. *Young* like female, but more ashy." (*Hist. N. Am. B.*)

The Pine Grosbeak—much the largest of the North American Fringillidæ—is an irregular winter visitant to the more northern portions of the State. Mr. Thos. H. Douglas, of Waukegan, writes me, under date of January 2, 1884, that, having been informed of a flock of "strange birds," which had been seen eating high-bush cranberries, he, the next day saw from his room a small flock flying by, which proved to be this species. He adds: "They are more shy than the Evening Grosbeak, as a shot will generally scare them out of sight."

Genus CARPODACUS Kaup.

Carpodacus Kaup, Entw. Europ. Thierw. 1829, 161. Type, *Loxia erythrina* Pall.

"Char. Bill short, stout, vaulted; the culmen decurved towards the end; the commissure nearly straight to the slightly decurved end. A slight development of bristly feathers along the sides of the bill, concealing the nostrils. Tarsus shorter than the middle toe; lateral claws reaching to the base of the middle one. Claw of hind toe much curved, smaller than the middle one, and rather less than the digital portion. Wings long and pointed, reaching to the middle of the tail, which is considerably shorter than the wing, and moderately forked. Colors red, or red and brown. *Female.* With the red replaced by brown." (*Hist. N. Am. B.*)

While the western portions of North America possess three species of this genus (*C. frontalis*, the familiar House Finch, of the Valley portions, *C. purpureus californicus*, or California Purple Finch, of the Pacific coast, and *C. cassini*, Cassin's Purple Finch, of the higher mountains), but a single species occurs in the eastern portions of the continent. This, the common Purple Finch (*C. purpureus*), occurs within the United States chiefly in winter and early spring, the greater part of its breeding range being located beyond our northern boundary.

Carpodacus purpureus (Gmel.)

PURPLE FINCH.

Popular synonyms. Purple Linnet; Purple Grosbeak; Strawberry Bird (Connecticut); Rosy Linnet; Roseate Grosbeak or Finch.

Fringilla purpurea GMEL. S. N. i, 1788, 923.—WILS. Am. Orn. i, 1808, 119, pl. 7, fig. 4; v, 1812. 87, pl. 43, fig. 3.—AUD. Orn. Biog. i, 1831, 24; v, 1839, 500, pl. 4.—NUTT. Man. i, 1832, 529.
Erythrospiza purpurea BONAP. 1838.—AUD. B. Am. iii, 1841, 170, pl. 196.
Carpodacus purpureus GRAY.—BAIRD, B. N. Am. 1858, 412; Cat. N. Am. B, 1859, No. 305.—COUES, Key, 1872, 128; Check List, 1873, No. 139; 2d ed. 1882, No. 194; B. N. W. 1874, 106.—B. B. & R. Hist. N. Am. B. i, 1874, 465, pl. 21, figs. 10, 11.—RIDGW. Nom. N. A. B. 1881, No. 168.

HAB. Eastern temperate North America, but breeding chiefly north of the United States; in winter, south to Gulf coast.

"SP. CHAR. Second quill longest; first shorter than third,—considerably longer than the fourth. Body crimson, palest on the rump and breast, darkest across the middle of back and wing-coverts, where the feathers have dusky centres. The red extends below continuously to the lower part of the breast, and in spots to the tibiæ. The belly and under tail-coverts white, streaked faintly with brown, except in the very middle. Edges of wings and tail-feathers brownish red; lesser coverts like the back. Two reddish bands across the wings (over the ends of the middle and greater coverts). Lores dull grayish. Length, 6.25 inches; wing, 3.34; tail, 2.50; bill above, .46. *Female.* Olivaceous brown above; brighter on the rump. Beneath white; all the feathers everywhere streaked with brown, except on the middle of the belly and under coverts. A superciliary light stripe."

Although best known as a spring migrant, when the flocks are rendered conspicuous by reason of their musical warblings, the Purple Finch is a winter resident in the more southern portions of the State. The writer first made its acquaintance at Mount Carmel, in mid-winter, under circumstances of delightful memory. The ground was covered with snow,—the weather clear and bright, but cold. Crossing a field in the outskirts of the town, and approaching the line of tall, dead "rag-weeds" (*Ambrosia trifida*) which grew thickly in the fence corners, a straggling flock of birds was startled, flew a short distance, und again alighted on the tall weed-stalks, uttering as they flew a musical, metallic *chink, chink.* The beautiful

crimson color of the adult males, heightened by contrast with the snow, was a great surprise to the writer, then a boy of thirteen, and excited intense interest in this, to him, new bird. On subsequent occasions during the same winter, they were found under like circumstances, and also in "sycamore" or buttonwood trees, feeding on the small seeds contained within the "balls" of this tree.

The Purple Finch may possibly breed in the extreme northern portion of the State, but has not yet been recorded, so far as the writer is aware, as doing so.

From *History of North American Birds* (Vol. I., pp. 463, 464) we quote the following paragraphs, by Dr. T. M. Brewer, pertaining to the breeding habits of this species:

"The Purple Finch, or, as it is generally known in New England, the Linnet, is one of our sweetest, best, and most constant songsters, and is often trapped and sold as a cage bird. They soon become accustomed and partially reconciled to their confinement, but sing only during a small part of the year. When one of these birds, confined in a cage, is hung outside the house, in the country, he is sure to draw around him quite a number of his species, and this furnishes the dealer a ready means of capturing them.

"The song of the Purple Finch resembles that of the Canary, and though less varied and powerful, is softer, sweeter, and more touching and pleasing. The notes of this species may be heard from the last of May until late in September, and in the long summer evening are often continued until it is quite dark. Their song has all the beauty and pathos of the Warbling Vireo, and greatly resembles it, but is more powerful and full in tone. It is a very interesting sight to watch one of these little performers in the midst of his song. He appears perfectly absorbed in his work,—his form is dilated, his crest is erected, his throat expands, and he seems to be utterly unconscious of all around him. But let an intruder of his own race appear within a few feet of the singer, and the song instantly ceases, and in a violent fit of indignation he chases him away."

Genus **LOXIA** Linnæus.

Loxia Linnæus, Syst. Nat. ed. 10, 1758, 171. Type, *Loxia curvirostra* Linn.

"Gen. Char. Mandibles much elongated, compressed and attenuated; greatly curved or falcate, the points crossing or overlapping to a greater or less degree. Tarsi very short; claws all very long, the lateral extending beyond the middle of the central; hind claw longer than its digit. Wings very long and pointed, reaching beyond the middle of the narrow, forked tail. Colors reddish in the male.

"The elongated, compressed, falcate-curved, and overlapping mandibles readily characterize this genus among birds. This feature, however, only belongs to grown specimens, the young having a straight bill as in other Finches." (*Hist. N. Am. B.*)

The two North American species of this genus may be very readily distinguished by the uniformly brownish wings of *L. minor*, and the conspicuous white spots or bands on the greater and middle wing-coverts in *L. leucoptera*,—these differences characterizing both sexes, at all ages.

Loxia curvirostra minor (Brehm).

AMERICAN CROSSBILL.

Popular synonym. American Red Crossbill.

Loxia curvirostra Forst. Phil. Trans. lxii, 1772, 402 (*nec* Linn).—Nutt. Man. i, 1832, 583.—Aud. Orn. Biog. ii, 1834, 559; v. 1839, 511, pl. 197; Synop. 1839, 128; B. Am. iii, 1841, 186, pl. 200.

Curvirostra americana Wils. Am. Orn. iv, 1811, 44, pl. 31, figs. 1, 2.—Baird, B. N. Am. 1858, 426; Cat. N. Am. B. 1859, No. 318.

Loxia curvirostra var. *americana* Coues, Key, 1872, 351; Check List, 1873, No. ——; B. N. W. 1874, 109.—B. B. & R. Hist. N. Am. B. i, 1874, pl. 23, figs. 1, 4.

Loxia curvirostra americana Ridgw. Nom. N. Am. B. 1881, No. 172.—Coues, 2d Check List, 1882, No. 199.

Curvirostra minor Brehm, Naum. 1853, 193.

Loxia curvirostra minor Ridgw. Proc. U. S. Nat. Mus. viii, 1885, 354.

Hab. Temperate North America, breeding from northern border of United States north to portions of Alaska, and on higher mountain ranges south to Pennsylvania, Eastern Tennessee, etc. (In Rocky Mountains and other higher western ranges replaced in summer by the much larger *L. curvirostra mexicana*.) South to Virginia, Tennessee, etc.

"Sp. Char. *Old male* dull red (the shade differing in the specimen, sometimes brick-red, sometimes vermilion, etc.); darkest across the back; wings and tail dark blackish-brown. *Young male* yellowish. *Female* dull greenish-olive above, each feather with a dusky center; rump and crown bright greenish yellow. *Young* olive above; whitish beneath, conspicuously streaked above and below with blackish. Male about 6 inches; wing, 3.30; tail, 2.25." (*Hist. N. Am. B.*)

Perhaps no birds are more erratic in their movements than the Crossbills; and this observation applies no less to their habits during the breeding season than at other times. They appear and disappear from a given locality in the most unexpected manner, and it probably cannot be said of any district that any species of this genus is a constant inhabitant during any portion of the year. In Illinois, the present species is an irregular visitant throughout the State, being of course more rare and uncertain in the southern than in the northern portion.

Having had few opportunities for observing the habits of this species, we quote the following from *History of North American Birds* (Vol. I., pp. 487, 488), written by Dr. Thos. M. Brewer:

"The Crossbills are extremely gentle and social, are easily approached, caught in traps, and even knocked down with sticks. Their food is chiefly the seeds of the *Coniferæ*, and also those of plants. Audubon's statement that they destroy apples merely to secure the seeds is hardly accurate. They are extravagantly fond of this fruit, and prefer the flesh to its seeds. Their flight is undulating, somewhat in the manner of the Goldfinch, firm, swift and often protracted. As they fly, they always keep up the utterance of their loud, clear call-notes. They move readily on the ground, up or down the trunks and limbs of trees, and stand as readily with their heads downward as upright.

"So far as is known, these Crossbills breed in mid-winter, or very early in the spring, when the weather is the most inclement. The nest and eggs of this species were procured by Mr. Charles S. Paine, in East Randolph, Vt., early in the month of March. The nest was built in an upper branch of an elm,—which, of course, was leafless,—the ground was covered with snow, and the weather severe. The birds were very tame and fearless, refusing to leave their eggs, and had to be several times taken off by the hand. After its nest had been taken, and Mr. Paine was descending with it in his hand, the female again resumed her place upon it, to protect the eggs from the biting frost. The eggs were four in number and measured .85 by .53 of an inch. They have a greenish white ground, and are beautifully blotched, marbled, and dotted with various shades of lilac and purplish brown."

[Further interesting information on the breeding habits of this species may be found in the "Nuttall Bulletin" for January, 1880, pp. 7–11, and 50, 51; and in the "Ornithologist and Oölogist" for December, 1880, pp. 78, 79, is a record of the capture of specimens at Rugby, Tennessee, July 27 and August 7, 1880.]

Loxia leucoptera (Gmel.)

WHITE-WINGED CROSSBILL.

Loxia leucoptera Gmel. S. N. i, 1788, 844.—Nutt. Man. i, 1852, 540.—Aud. Orn. Biog. iv, 1883, 467, pl. 364; Synop. 1839; B. Am. iii, 1841, 190, pl. 201.—B. B. and R. Hist. N. Am. B. i, 1874, 488, pl. 23, figs. 2, 3.—Coues, Check List, 1873, No. 142; 2d ed. 1882, No. 198; B. N. W. 1874, 110.—Ridgw. Nom. N. Am. B. 1881, No. 175.

Curvirostra leucoptera WILS. Am. Orn. iv, 1811, 48, pl. 31 fig. 3.—BAIRD, B. N. Am. 1858, 427; Cat. N. Am. B, 1859, No. 319.—COUES, Key, 1872, 129.
Loxia atrata von HOMEYER, J. f. O. 1879. 179.

HAB. Northern North America, breeding from northern New England and northern Rocky Mountain districts northward. (Said by AUDUBON to breed in mountainous portions of Pennsylvania.) In winter, south to or beyond 39°, in some seasons. No Pacific coast record south of Alaska; accidental in Greenland and in Europe.

SP. CHAR. Bill greatly compressed, and acute towards the point. *Male* carmine-red, tinged with dusky across the back; the sides of the body under the wings streaked with brown; from the middle of belly to the tail-coverts whitish, the latter streaked with brown. Scapulars, wings, and tail black; two broad bands on the wings across the ends of greater and median coverts; white spots on the end of the inner tertiaries. *Female* brownish, tinged with olive-green in places; feathers of the back and crown with dusky centres; rump brownish yellow. Length about 6.25; wing, 3.50; tail, 2.60.

The white bands on the wings distinguish this species from the preceding, although there are some other differences in form of bill, feet, wing, etc. There is less variation in form and color among specimens than in the preceding. The American White-winged Crossbill differs from its European analogue, *L. bifasciata*, in the more slender body and bill, and in having the body pomegranate-red, with blackish back, instead of cinnabar-red, as in *curvirostra* and *minor*. Bonaparte and Schlegel quote the American species as occurring in the Himalaya Mountains, and perhaps Japan, but throw doubts on the supposed European localities.

In the *Journal für Ornithologie* for 1879, p. 179, von Homeyer describes as a new species ("*Loxia atrata*") what appears to be a variation of *L. leucoptera;* but the circumstance that the supposed species is based on two specimens "exactly alike" suggests the possibility of the form in question proving eventually to be perhaps a local race of *L. leucoptera*. A free translation of the original description, in German, is as follows:

"Somewhat smaller than *L. leucoptera*, but with about the same length of wing, the tail at least 10 mm. shorter. Distinguished by its coloration. The red in ground tone is nearest that of the 'Hakengimpel' [*Pinicola enucleator*], but everywhere darker, and saturated, as it were, with black, this color extending indefinitely both on the back as well as on the middle of the belly to the breast, as also on the lower tail-coverts. The feet are even darker colored than in *leucoptera*. The wing-bands are unaffected for the most part, although not quite so broad. This is especially seen in the first or terminal band, which begins, scarcely visible, at the edge of

the wing, and remains very inconsiderable to the middle, then qu ckly expands to a great rounded spot. The extent of the second band is everywhere much more limited than in *leucoptera*.

"This is decidedly not a melanism, as is shown, not alone by the character of the coloration, but by the occurrence of two old males exactly alike.

"My two birds came from North America."

The same general remarks found under *Loxia americana* will apply equally well to the present species. The White-winged Crossbill is, however, decidedly a more northern bird so far as its summer habitat is concerned, breeding abundantly in the subarctic portions of the continent from northern Labrador and the western shores of Cumberland Gulf to Alaska, or quite to the northward of the breeding range of *L. americana*.

Mr. Thos. H. Douglas, of Waukegan, sends me, under date of November 17, 1883, the following exceedingly interesting note on this species:

"Last winter we were visited by several flocks of *Loxia leucoptera* and a few of *L. americana*. The former were in a stained condition of plumage. They stayed around piles of pine and spruce cones we had gotten the seeds out of. They came about the first of February, and some stayed as late as April 1. One of the *americana* and two *leucoptera* were here until the latter part of April. Although these two species got along well together when out of doors (would pick seeds out of the same cone), when in captivity (as we had them several times) the former would not let the latter feed, and killed some by picking them on the head. They were very easily caught. We captured several with our hands, and a great many in a common flour-sieve fastened to a pole about six feet long. They would eat out of our hands in a few minutes after being caught. A number were kept in confinement here. I have four—three males and one female. I think there are several more in town. Both sexes sing (the female in a lower voice) in a low and sweet but disconnected tone. Since moulting, the males have had an olive-green plumage, without any show of red."

January 2, 1884, he writes me as follows:

"My crossbills are still alive and flourishing, I will try and mate them the coming spring. I have three males and one female. The latter got out of the cage while it was hanging out of doors in the

summer and came back the next day and allowed itself to be taken by hand. The males since moulting are about the color of *Dendroica æstiva*."

In the spring of 1839, Mr. Jillson, of Hudson, Mass., sent Dr. Brewer a pair of these birds which he had captured the preceding autumn. They were very tame, and were exceedingly interesting little pets. Their movements in the cage were like those of caged parrots in every respect, except that they were far more easy and rapid. They clung to the sides and upper wires of the cage with their feet, hung down from them, and seemed to enjoy the practice of walking with their head downward. They were in full song, and both the male and female were quite good singers. Their songs were irregular and varied, but sweet and musical. They ate almost every kind of food, but were especially eager for slices of raw apples. An occasional larch cone was also a great treat to them. Although while they lived they were continually bickering over their food, yet when the female was accidently choked by a bit of egg shell her mate was inconsolable, ceased to sing, refused his food, and died of grief in a very few days.

Genus **ACANTHIS** Bechstein.

Acanthis Bechst. Orn. Tasch. Deutsch. 1803, 125. Type, *Fringilla linaria* Linn.
Ægiothus Cabanis, Mus. Hein. 1851, 161. Type, *Fringilla linaria* Linn.

"Sp. Char. Bill very short, conical, acutely pointed, the outlines sometimes concave; the commissure straight; the base of the upper mandible and the nostrils concealed by stiff appressed bristly feathers; middle of the mandible having several ridges parallel with the culmen. Inner lateral toe rather the longer, its claw reaching the middle of the middle claw; the hind toe rather longer, its claw longer than the digital portion. Wings very long, reaching the middle of the tail; second quill a little longer than the first and third. Tail deeply forked." (*Hist. N. Am. B.*)

Species and Races.

Common Characters. *Adult.* Above streaked with dusky upon a brownish, or brown and whitish, ground; wing-coverts tipped with whitish or pale brown. Beneath whitish, usually streaked on the sides with dusky. An indistinct, lighter superciliary stripe. Crown crimson (except in *A. brewsteri.*) *Male.* Breast more or less tinged with rose-pink. *Female.* Breast not tinged with pinkish. *Young.* Without any pink on breast.

A. Crown of adult with a patch of crimson. Chin with a dusky spot.

1. **A. hornemannii.** Bill very short, the depth at the base nearly equal to or greater than its length. Rump wholly white, or with white largely prevailing. Breast in adult male delicate peach-blossom pink. Lower tail-coverts with white shafts.
   a. Bill very stout, rather obtuse, the depth through the base about equal to length of culmen. Wing, 3.25 or more; tail, 2.70 or more. *Hab.* Greenland; northern Labrador (Ungava) in winter ..... *A. hornemannii.*

b. Bill more slender, very acute, the depth through base less than depth of culmen. Wing, 3.10 or less; tail, 2.60 or less. *Hab.* Arctic America, except Greenland; south, in winter to northern U. S..... ....*A. hornemannii exilipes.*

2. **A. linaria.** Bill more slender, the depth through the base much less than length of culmen. Rump heavily streaked with dusky, the latter usually largely prevailing. Breast in adult male intense rose-pink. Lower tail-coverts with dusky shafts.

a. Wing, 3.00 or less, tail, 2.50 or less. *Hab.* Arctic and subarctic America, except Greenland; in winter to U. S ....*A. linaria.*

b. Wing usually more than 3.00 inches; tail, 2.60 or more. Bill much larger and stouter, less acute at tip. *Hab.* Greenland south in winter to northern border of U. S.....*A. linaria rostrata.*

B. Adult without red patch on crown, or dusky spot on chin.

3. **A. brewsteri.** Above olive-brown, streaked with dusky, the rump tinged with sulphur-yellow. Below whitish, tinged on jugulum with fulvous yellow, the sides and crissum streaked with dusky. Wings with two pale fulvous bands. Wing, 3.00; tail, 2.50. *Hab.* Massachussetts in winter. (Only one specimen known.)

Acanthis hornemannii exilipes (Coues).

HOARY RED-POLL.

Popular synonyms. Coues' Redpoll, or Linnet; White-rumped Redpoll.

Fringilla borealis AUD. Orn. Biog. v, 1839, 87, pl. 400 (*nec* VIEILL).
Linaria borealis AUD. B. Am. iii, 1841, 120, pl. 178 (*nec* TEMM).
Ægiothus exilipes COUES, Proc. Phil. Ac. 1861, 385; 1869, 187; 2d Check List, 1882, No. 210.
Ægiothus linaria var. *exilipes* COUES, Key, 1872, 131; Check List, 1873, No. 146 *b*.
Ægiothus canescens var. *exilipes* B. B. & R. Hist. N. Am. B. i, 1874, 493, pl. 22 fig. 2.
Ægiothus canescens exilipes RIDGW. Nom. N. Am. B. 1881, No. 178 *a*.
Acanthis hornemannii exilipes STEJNEGER, "The Auk," i, 1884, 152.

HAB. Arctic America (except Greenland) migrating southward in winter to northern Illinois, Massachusetts, etc.

SP. CHAR. *Adult male in summer.* General color white, this immaculate on rump and lower parts (the sides occasionally streaked, however); the jugulum and sides of breast delicate peach-blossom pink, the rump often tinged with the same. Crown crimson. Occiput, nape, back, and scapulars, grayish brown, streaked with whitish and dusky. Bill dusky. *Adult male in winter.* Similar, but plumage more or less suffused with fulvous, and the bill yellow, with dusky culmen and gonys. *Adult female.* Similar to the male, but without the pink on the breast, etc. Wing, about 2.75-3.00; tail, 2.35-2.50.

The Lesser White-rumped Redpoll is a very rare winter visitant to the extreme northern portion of the State. I have seen specimens in the collection of Mr. E. W. Nelson, that were collected in the vicinity of Chicago, but I am unable to give dates of their capture. The National Museum likewise possesses specimens from Mount Carroll, collected by Dr. H. Shimer. This species breeds abundantly throughout the subarctic districts, from northern Labrador to western Alaska, whence numerous specimens both of the bird itself and its nest and eggs have been sent to the National Museum; but we have not, as yet, any account of its distinctive habits.

Acanthis linaria (Linn.)

REDPOLL.

Popular synonyms. Common Redpoll; Dusky Redpoll; Snowbird; Redpoll Linnet.

Fringilla linaria Linn, S. N. ed. 10, i, 1758, 182; ed. 12, i, 1766, 322.—Wils. Am. Orn. iv, 1811, 41, pl. 30, fig. 4; ix, 1814, 126.—Nutt. Man. i, 1832, 512.—Aud. Orn. Biog. iv, 1838, 523, pl. 375.

Ægiothus linaria Cab. Mus. Hein. 1851, 161.—Baird, B. N. Am. 1858, 428; Cat. N. Am. B. 1859, No. 320.—Coues, Key, 1872, 130; Check List, 1873, No. 146; 2d ed. 1882, No. 207; B. N. W. 1874, 114.—B. B. & R. Hist. N. Am. B. i, 1874, 493, pl. 22, figs. 3, 5.—Ridgw. Nom. N. Am. B. 1881, No. 179.

Acanthis linaria Bon. & Schl. Monog. Lox. 1850, pl. 52.

Linaria minor Sw. & Rich. F. B. A. ii, 1831, 267.—Aud. Synop. 1839, 114; B. Am. iii, 1841, 122, pl. 179.

Ægiothus fuscescens Coues, Proc. Phil. Ac. 1861, 222.

Ægiothus linaria var. *fuscescens* Coues, Key, 1872, 131.

Hab. Northern North America, (except Greenland) south, in winter, to about lat. 40° (occasionally farther); breeds chiefly, if not entirely, north of the United States. Inhabits, also, northern portions of the Old World.

Sp. Char. *Adults in spring and winter.* Ground color of the occiput, nape, scapulars, and interscapulars, brownish white, each feather with medial streak of dusky brown; rump and upper tail-coverts white, with the streaks in sharper contrast. Wings clear brownish dusky, with two conspicuous white bands, formed by tips of middle and secondary coverts; tertials broadly, and secondaries narrowly, edged with white,—this broader on inner webs. A narrow frontal band (tinged with brownish), an obscure superciliary stripe, and the lower parts in general, white; sides streaked with dusky, and lower tail-coverts each with a medial streak of the same. On the forehead and vertex a somewhat quadrate patch of intense carmine. Nasal plumules, lores, and a small, somewhat quadrate, gular spot, dark silky brown. Bill yellow, the culmen and gonys black.

Male. Throat, jugulum, and breast, rosy carmine (extending upward over the malar region, and backward over the sides almost to the flanks); rump tinged with the same.

Female. No red except on the crown, where its tint is less intense; dusky gular spot larger, extending farther on to the throat.

Adult in breeding (midsummer) plumage (="*Æ. fuscescens*" Coues). The pattern the same as above, but the dark tint intensified and spread so as to almost entirely obliterate any lighter markings, except the streaks on the rump; the wing-bands, as well as the dorsal streaks, obsolete; streaks on the sides broader; frontal band dusky, like the occiput. Red tints slightly intensified. Bill wholly dusky.

Male. Throat, jugulum, breast, and tinge on sides and rump, rosy carmine.

Female. Without red on the breast.

Young, first plumage. Whole head, neck, and breast streaked, and without trace of red.

Dimensions. Male. Wing, 2.80; tail, 2.30–2.35; bill, .35–.36×.20–.25; tarsus, .53–.55; middle toe, .30–.33. *Female.* Wing, 2.70–2.80; tail, 2.30–2.35; bill, .32–.35×.23–.25; tarsus, .52–.55; middle toe, .32–.34.

The plumage of this species is quite different in summer and in winter. In the latter season the plumage is softer and more lax, and the markings better defined, though in autumn with a considerable ochraceous suffusion. In spring the colors are purer, and the

markings more sharply defined; in the breeding season the plumage assumes a burnt appearance, the dark tints intensify and spread, so that sometimes the upper parts appear almost uniformly dusky; the bill appears larger than in winter, in consequence of the less development, or wearing away, of its basal tufts. In this dusky summer condition it becomes the *Æ. fuscescens* of Coues. In the series of over two hundred examples examined, all midsummer specimens are in the plumage of *fuscescens*, while the latter is not seen in any autumnal, winter, or spring birds.

This pretty little bird is a common and regular winter visitor in the northern portions of the State, but its occurrence in the southern portions is so rare that the writer has seen it but on one occasion at Mount Carmel. It appears in flocks, which feed upon the seeds of various herbaceous plants, and is very unsuspicious. Its breeding range includes the whole region from Labrador to Alaska, with an undetermined southern limit, which, however, probably nowhere approaches very near to the northern boundary of the United States.

According to Dr. Brewer, "their migration southward in winter is evidently caused more by want of food than by the state of the temperature. They remain in high northern regions in the most inclement weather, and often appear among us in seasons not remarkably cold, and remain until late in the spring."

Acanthis linaria rostrata (Coues).

GREATER REDPOLL.

Popular synonym. Greenland Dusky Redpoll.

Ægiothus rostratus COUES, Proc. Phil. Ac. 1861, 378.
Acanthis linaria rostrata STEJNEGER, Auk, i, 1884, 153.
Ægiothus linarius, var. *holbölli* B. B. & R. Hist. N. Am. B. i, 1874, 493 (part).
Ægiothus linaria holbölli RIDGW. Nom. Am. B. 1881, No. 179 *a*.
Ægiothus linaria holboelli BREWST. Bull. N. O. C. 1883, 95 (critical).
Linaria brunnesdens VON HOMEYER, J. f. O. 1879, 184 (part?).

CHAR. Similar to *A linaria* (*vera*) in plumage (usually, however, more heavily streaked on the sides, etc.), but all the dimensions decidedly greater. Wing, 3.00–3.30; tail, 2.60–2.70; culmen, .41–.47; depth of bill at base, .25–.30; tarsus, .65–.70; middle toe, .35–.40.

This large race of *A. linaria* is the Greenland representative of the species, though it is by no means confined to that country. It is, however, there, the prevailing if not the only form, while on the

continent it occurs chiefly in winter, though occasional summer specimens from very high latitudes appear to be scarcely smaller than Greenland samples.

Mr. H. K. Coale has taken this bird near Chicago, and has kindly sent me for examination the specimens which he secured.

Genus **SPINUS** Koch.

Spinus Koch, Bayr. Zool. 1816, 233. Type, *Fringilla spinus* Linn.
Chrysomitris Boie, Isis, 1828, 322 (same type).

"Gen. Char. Bill rather acutely conic, the tip not very sharp; the culmen slightly convex at the tip; the commissure gently curved. Nostrils concealed. Obsolete ridges on the upper mandible. Tarsi shorter than the middle toe; outer toe rather the longer, reaching to the base of the middle one. Claw of hind toe shorter than the digital portion. Wings and tail as in *Ægiothus*.

"The colors are generally yellow, with black on the crown, throat, back, wings and tail, varied sometimes with white.

"The females want the bright markings of the male."

"This genus differs from *Ægiothus* [=*Acanthis*] in a less acute and more curved bill, a much less development of the bristly feathers at the base of the bill, the claw of the hind toe shorter than its digital portion, the claws shorter and less curved and attenuated, and the outer lateral toes not extending beyond the base of the middle claw."—(*Hist. N. Am. B.*)

The species occurring in the eastern United States (one of them probably as a purely accidental straggler) are the following:

A. Inner webs of tail feathers with a white patch.

1. **S. tristis.** *Adult male in summer:* Rich lemon yellow, with black forehead, wings, and tail; tail-coverts, band across wing, and outer wing-markings, white. *Adult female:* Wings and tail as in the male, but duller; upper parts olive, tinged with lemon-yellow; lower parts pale yellowish, or sometimes grayish white, tinged with yellow anteriorly; no black on head. *Adult male in winter:* Similar to summer female, but more brownish.

B. Inner webs of tail feathers without white patch, but with yellow bases.

2. **S. pinus.** *Adult* (sexes alike): Above grayish or brownish, below dull white, everywhere streaked with dusky; bases of secondaries and tail-feathers sulphur-yellow. *Young:* Similar, but with a fulvous suffusion, especially on tips of wing-coverts; yellow of remiges and rectrices usually more exposed.

3. **S. notatus.** *Adult male:* Entire head, neck, and jugulum, with wings and tail, black; a patch of rich yellow on bases of remiges and rectrices; upper parts greenish olive-yellow, clouded with dusky on the back; beneath rich oil-yellow. *Adult female:* Head and neck olive above and yellow beneath, like the body; wings and tail less intensely black than the male.

Spinus tristis (Linn.)

AMERICAN GOLDFINCH.

Popular synonyms. Yellow-bird; Lettuce-bird; Salad-bird; Thistle-bird; Black-winged Yellow-bird; Black-capped Yellow-bird.

Fringilla tristis LINN. S. N. ed. 10, i, 1758, 181; ed. 12, i, 1766 320.—WILS. Am. Orn. i, 1808, 20, pl. 1, fig. 2.—AUD. Orn. Biog. i, 1831, 172; v. 510, pl. 33.—NUTT. Man. i, 1832, 507.

Carduelis tristis BP. 1825.—AUD. Synop. 1839, 116; B. Am. iii 1841, 129, pl. 181.

Chrysomitris tristis BP. 1838.—BAIRD, B. N. Am. 1858, 421; Cat. N. Am. B. 1859, No. 313. COUES, Key, 1872, 131; Check List, 1873, No. 149; B. N. W. 1874, 116.—B. B. & R. Hist. N. Am. B. i, 1874, 471, pl. 22 figs. 7, 8.

Astragalinus tristis CAB. Mus. Hein. 1851, 159.—RIDGW. Nom. N. Am. B. 1881, No. 181. —COUES, 2d Check List, 1882, No. 213.

Spinus tristis STEJN. Auk, i, 1884, 362.

HAB. Whole of temperate North America, breeding nearly throughout its range.

"SP. CHAR. *Male.* Bright gamboge-yellow; crown, wings, and tail black. Lesser wing-coverts, band across the end of greater ones, ends of secondaries and tertiaries, inner margins of tail-feathers, upper and under tail-coverts and tibia white. Length, 5.25 inches; wing, 3.00. *Female.* Yellowish gray above; greenish yellow below. No black on forehead. Wing and tail much as in the male. *Young.* Reddish olive above; fulvous yellow below, two broad bands across coverts and broad edges to last half of secondaries pale rufous.

"In winter the yellow is replaced by a yellowish brown; the black of the crown wanting, that of wings and tail browner. The throat is generally yellowish; the under parts ashy brown passing behind into white." (*Hist. N. Am. B.*)

Found abundantly throughout temperate North America, familiar in habits, and conspicuous in plumage, it is no wonder that the American Goldfinch is one of our best known birds. Known familiarly as Yellow-bird, Lettuce-bird, or Garden-bird, he is present with us at all seasons of the year, although there are many times when none are to be seen. In the fall the male loses his beautiful lemon-yellow plumage and assumes a sombre garb like that of the female, which he wears until the succeeding spring, when the rich colors of summer are resumed very gradually, the change commencing in April and continuing until the summer is at hand, before all traces of the winter dress are lost. The Goldfinch is one of the latest of our birds to commence breeding, it being usually after the first of July, in the more eastern States,* before their nests are constructed; and some broods of young first leave their nest in September. This late breeding, as Dr. Brewer suggests, is probably due to the scarcity of proper food for the young during the early part of summer.

* At Sacramento, California, however, I found this species breeding very abundantly during the month of June, nests with fresh eggs being taken from the 6th to the 28th of the month.

"The Goldfinch is to a large extent gregarious and nomadic in its habits, and only for a short portion of the year do these birds separate into pairs for the purposes of reproduction. During at least three fourths of the year they associate in small flocks, and wander about in an irregular and uncertain manner in quest of their food. They are resident throughout the year in New England and also throughout the greater portion of the country, their presence or absence being regulated to a large extent by the abundance, scarcity, or absence of their favorite kinds of food. In the winter, the seeds of the taller weeds are their principal means of subsistence. In the summer, the seeds of the thistle and other plants and weeds are sought out by these interesting and busy gleaners. They are abundant in gardens, and as a general thing do very little harm, and a vast amount of benefit in the destruction of the seeds of troublesome weeds. As, however, they do not always discriminate between seeds that are troublesome and those that are desirable, the Goldfinches are unwelcome visitors to the farmers who seek to raise their own seeds of the lettuce, turnip, and other similar vegetables. They are also very fond of the seeds of the sunflower." (BREWER.)

The notes of the American Goldfinch are for the most part remarkably sweet, partaking somewhat of the nature of the *tweet* of a canary bird, but more tender; and the song is no mean performance. The latter more nearly resembles that of the Indigo Bunting than that of any other American species, but is more irregular, less harsh, and interrupted by interpolations of the ordinary call-notes.

The following interesting notes on the nest and eggs of the American Goldfinch were kindly prepared for this work, at my request, by Mr. Hugh M. Smith, of Washington, D. C.:

"Each of eleven nests in my collection, from Virginia, is similar to the others in structure, being composed of thin strips of grape-vine bark and weed fibre, fine grass, catkins, and thread, with a few leaves occasionally worked in; these are very neatly and compactly woven together. The interior is lined with thistle-down and sometimes a few feathers. The nest is cup-shaped; but inasmuch as the situation of the nest in a tree or shrub is variable, the shape, depending more or less on its resting place, is consequently somewhat modified. Some nests—probably the greatest number—are lodged in the upright crotch of a tree; some are pendant between two forking limbs; while others are saddled on a horizontal bough.

Orchards appear to be the favorite breeding localities of the Goldfinches. Young trees are preferred to old ones, the foliage of the former being denser, and offering greater concealment to the nest. The average size of a number of nests is three inches in diameter by one and a quarter inches in depth.

"The peculiar feature connected with the nidification of the Goldfinch is the late date at which the nests are constructed and the eggs deposited. The earliest date at which the eggs accompanying the above-mentioned nests were taken, was July 27, the latest August 31, the eggs in both instances being newly laid, and probably the full set. As late as the first week in September I have seen nests with incomplete sets. It was impossible to ascertain with accuracy when the nests were built, but the time can be surmised from the dates given for the eggs. For three successive years the nests and eggs of the Goldfinch were systematically searched for in the same neighborhood; no full nests, however, were ever found prior to the 27th of July, as above stated. This may meet the objection that might be made, that had the eggs been sought for, they would probably have been discovered sooner. From three to six eggs are laid; four or five is the usual number. They are bluish white, with a delicate rosy tinge when fresh."

Spiñus pinus (Wils.)

PINE SISKIN.

Popular synonyms. Pine Linnet; Pine Goldfinch.

Fringilla pinus WILS. Am. Orn. ii, 1810, 133, pl. 17, fig. 1.—NUTT. Man. i, 1832, 511.—AUD. Orn. Biog. ii, 1834, 455; v, 509, pl. 180.

Linaria pinus AUD. Synop. 1839, 117; B. Am. iii, 1841, 125, pl. 180.

Chrysomitris pinus BP. 1838.—BAIRD, B. N. Am. 1858, 425; Cat. N. Am. B. 1859, No. 317.—COUES, Key, 1872, 131; Check List, 1873, No. 148; 2d ed. 1883, No. 212; B. N. W. 1874, 115.—B. B. & R. Hist. N. Am. B. i, 1874, 480, pl. 22, fig. 16.—RIDGW. Nom. N. Am. B. 1881, No. 185.

Spinus pinus STEJN. Auk. i, 1884, 362.

HAB. Cold-temperate North America, breeding south to coast of Massachusetts, the Hudson Valley and along the Rocky Mountains to southern Mexico. (Southern breeding limit in Alleghanies undetermined.) In winter migrating, irregularly, over greater portion of United States.

"SP. CHAR. Tail deeply forked. Above brownish olive. Beneath whitish, every feather streaked distinctly with dusky. Concealed bases of tail-feathers and quills, together with their inner edges, sulphur-yellow. Outer edges of quills and tail feathers yellowish green. Two brownish white bands on the wing. Length, 4.75; wing, 3.00; tail, 2.20. Sexes alike. *Young* similar, but the white below tinged with yellow, the upper parts with reddish brown, and there are two pale ochraceous bands on the wing." (*Hist. N. Am. B.*)

In autumn and winter a reddish brown tinge overspreads the upper parts.

The Pine Goldfinch, or Pine Siskin, inhabits during summer the northern coniferous forests, but in winter visits the milder climates of the United States, its migration extending to the northern districts of the Gulf States, if not to the shores of the Gulf itself. Its appearance in a given locality is irregular and uncertain, to about the same degree as that of the Purple Finch. In spring, large flocks may be seen feeding upon the tender buds of apple, elm, and other trees, either alone or in company with the Purple Finch.

The nest of the Pine Goldfinch, as observed at Sing Sing, New York, is thus described by Dr. A. K. Fisher, in the "Nuttall Bulletin" for July, 1883, pp. 180, 181:

"On May 25 I secured the nest. It was situated about two feet from the top of the tree, and about twenty-four from the ground. It contained four nearly fresh eggs. The nest proper, or outside part, is a frail affair, the lining making up the bulk of the nest. The outer part is made up of fine twigs from the Norway spruce, loosely placed together, a few rootlets and pieces of string being interwoven. The lining is very compact, made up of hemp-like material, horse-hairs, bits of thread, feathers, rootlets, and like substances. The nest measures eight centimeters in breadth by five centimeters in depth. The ground work of the eggs is of a light blue-green, the spots, which are numerous and somewhat confluent on the larger end, are of a light brown-lilac color. A few large and solitary spots of dark brown are dispersed sparingly over the greater part of the egg, diminishing in size towards the smaller end. One egg was unfortunately broken; the others measure as follows: $12\frac{1}{2}\times16$ mm. $12\frac{1}{2}\times16\frac{1}{2}$mm, 12×17mm."

Genus **PLECTROPHENAX** Stejneger.

Plectrophanes Kaup. Entw. Eur. Thierw. 1829, 138 (*nec* Meyer, 1815). Type, *Emberiza nivalis* Linn.

Plectrophenax Stejn. Proc. U. S. Nat. Mus. v, 1882, 33. Same type.

Gen. Char. Bill conical; the lower mandible higher than the upper, the sides of both mandibles guarded by a closely applied brush of stiffened bristly feathers directed forwards, and on the upper jaw concealing the nostrils; the outlines of the bill nearly straight or slightly curved; the lower jaw considerably broader at the base than the upper, and wider than the gonys is long. Tarsi considerably longer than the middle toe; the lateral toes nearly equal (the inner claw largest), and reaching to the base of the middle claw. The hinder claw very long, moderately curved and acute, considerably longer than its toe; the toe and claw together reaching to the middle of the middle claw, or beyond its tip. Wings very long and much pointed, reaching nearly to the end of the tail; the first quill longest; the others rapidly graduated; the tertiaries a little longer than the secondaries. Tail moderate, about two thirds as long as the wings; nearly even, or slightly emarginated.

The two known species of this genus are essentially boreal, one of them, so far as known, being confined to the vicinity of Bering Sea, while the other is quite circumpolar. They are ground birds, collecting in large flocks, in autumn and winter, on tundra and plains, one of the species passing far to the southward. The recently discovered *P. hyperboreus*,* is distinguished by its much whiter coloration, only the tips of the quill-feathers and small spots near the end of the middle tail-feathers being black in the adult male.

Plectrophenax nivalis (Linn.)

SNOWFLAKE.

Popular synonyms. White Snowbird; Snow Bunting.

Emberiza nivalis Linn. S. N. ed. 10, i, 1758, 176; ed. 12, i, 1766 308.—Wils. Am. Orn. iii, 1811, 86, pl. 21, fig. 2.—Nutt. Man. i, 1832, 458.—Aud. Orn. Biog. ii, 1834, 515; v, 496, pl. 189.

Plectrophanes nivalis Meyer.—Aud. Synop. 1839, 99; B. Am. iii, 1841, 55, pl. 155.—Baird, B. N. Am. 1858, 432; Cat. N. Am. B. 1859, No. 325.—Coues, Key, 1872, 133; Check List, 1873, No. 152; 2d ed. 1882, No. 219; B. N. W. 1874, 118.—B. B. & R. Hist. N. Am. B. i, 1874, 512, pl. 24, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 186.

Plectrophenax nivalis Stejn. Proc. U. S. Nat. Mus. 1882, 33.

Hab. Northern North America, south in winter, to northern United States (very irregularly beyond 40°, but quoted from Georgia, District of Columbia, Kentucky, Kansas, etc.). Also found throughout the arctic and subarctic portions of the Old World.

"Sp. Char. *Male.* Colors, in spring plumage, entirely black and white. Middle of back between scapulars, terminal half of primaries and tertiaries, and two innermost tail-feathers, black; elsewhere pure white. Legs black at all seasons. In winter dress, white beneath; the head and rump yellowish brown, as also some blotches on the side of the breast; middle of back brown, streaked with black; white on wings and tail much more restricted. Length about 6.75; wings, 4.35; tail, 3.05; first quill longest. *Female.* Spring, continuous white beneath only; above entirely streaked, the feathers having blackish centres and whitish edges; the black streaks predominate on the back and crown. *Young.* Light gray above, with obsolete dusky streaks on the back; throat and jugulum paler gray,—the latter with obsolete streaks; rest of lower parts dull white. Wing-coverts, secondaries and tail-feathers broadly edged with light ochraceous brown." (*Hist. N. Am. B.*)

Although the "White Snowbird" or "Snowflake" is said to be an abundant winter resident of the northern portion of the State, it is so very rare in the more southern districts that the writer has seen there but a single specimen, the locality being Mount Carmel, and the date forgotten, but sometime during the early part of 1864 or 1865.

Mr. Nelson's notes on its occurrence in northeastern Illinois (*Bull. Essex Inst.*, Vol. VIII., 1876, p. 105) are as follows:

*See Proc. U. S. Nat. Mus. vii, 1884, 68.

"An abundant winter resident. Arrives in flocks, the first of November, and remains until about the middle of March. The 5th of March, 1875, I saw a flock of these birds in a tree in Chicago. The males were chanting a very low and somewhat broken, but very pleasant, song, bearing considerable resemblance to that of *Spizella monticola*. This and the following species, [*Calcarius lapponicus*], as well as other winter residents, appear a week or more earlier in the fall, and depart later in the spring, in the vicinity of the lake, than in any other parts of the State in the same latitude."

The Snow Bunting breeds throughout the Arctic regions of both continents, the National Museum possessing nests from the most northern point of Alaska (Point Barrow) and from Labrador, as well as from various intermediate localities.

Genus **CALCARIUS** Bechstein.

Calcarius Bechst. Orn. Tasch. Deutsch. 1803, 130. Type, *Fringilla lapponica* Linn.

Gen. Char. Bill small, the gonys very short, with its angle opposite the middle of the culmen; maxilla equal to or exceeding the mandible in depth, the depth of the bill not exceeding the length of the gonys. Middle toe, with claw, shorter than tarsus, the middle claw falling short of that of the hallux. Tail longer than the distance from the carpal joint to the tips of the tertials (except in *C. ornatus*).

The three species of this genus differ considerably in the details of form, but it is probable that these differences are of no more than specific value. Thus *C. ornatus* differs from both *C. pictus* and *C. lapponicus* in having the tail much shorter than the distance from the carpal joint of the wing to the end of the tertials, in which respect it agrees with *Rhynchophanes mccownii*, but this is apparently owing more to the greater development of the secondaries than to a really reduced length of the tail. In the form of the bill, however, it agrees very closely with *C. pictus*, which, as does also that of *C. ornatus*, differs from that of *C. lapponicus* in being more slender and pointed.

The species may be distinguished by the following characters:

Common Characters. Above brown, spotted with black. Male with the crown and other parts of the head black.

A. Outer tail-feathers dusky at the base.

1. **C. lapponicus.** Lower parts dull whitish. *Adult male in summer:* Head and jugulum black, with a broad white supra-auricular stripe; nape bright chestnut-rufous; lesser wing-coverts grayish; middle coverts dusky. *In winter:* Similar, but throat whitish, jugular patch badly defined, head much tinged with ochraceous, and rufous of nape obscured by grayish. *Adult female in summer:* Head mostly dull buffy, the crown with two broad lateral stripes of broad dusky streaks, the

ear-coverts tipped with a dusky bar; a dusky patch on each side of throat and indication of one on the jugulum; nape faintly rufous, streaked with black. *In winter:* Similar, but more suffused with brownish. *Young:* Head, neck, jugulum, and upper parts yellowish fulvous, streaked with black; crown and wings strongly tinged with rufous.

2. **C. pictus.** Lower parts deep buff. *Adult male in summer:* Head black, with lores, centre of ear-coverts, a maxillary and a supra-auricular stripe, white; throat, nape, and entire lower parts deep buff; lesser wing-coverts black, with the last row white. *In winter:* The wing and lower parts similar, but the head without well-defined black, and the white replaced by buff. *Adult female:* Similar to male in winter plumage, but jugulum streaked with dusky, and lesser wing-coverts grayish.

B. Base of outer tail-feathers white.

3. **C. ornatus.** Two outer tail-feathers white to the extreme base, and third with base white. *Adult male:* Nape chestnut-rufous; belly black. *In summer:* Top of head, jugulum, and belly deep black, the latter sometimes tinged with rufous; nape uniform deep chestnut-rufous; all markings sharply contrasted. *In winter:* Top of head streaked with black and fulvous, the rufous of nape and black of lower parts overlaid and nearly concealed by light grayish fulvous tips of feathers. *Adult female:* Entirely light dull buff, the upper parts broadly, and sometimes the breast narrowly, streaked with dusky. *Young:* Above blackish, the feathers bordered with dull whitish; wings dull brownish fulvous; throat white, faintly spotted with dusky; rest of lower part pale dull buff, the breast streaked with dusky.

Calcarius lapponicus (Linn.)

LAPLAND LONGSPUR.

Popular synonym. Brown Snowbird.

Fringilla lapponica Linn. S. N. ed. 12, i, 1766, 317.

Emberiza lapponica Nilss.—Nutt. Man. i, 1832, 463.—Aud. Orn. Biog. iv, 1838, 473, pl. 365.

Emberiza (Plectrophanes) lapponica Sw. & Rich. F. B. A. ii, 1831, 248, pl. 48.

Plectrophanes lapponicus Selby.—Aud. Synop. 1839, 98; B. Am. iii, 1841, 50, pl. 152.—Baird, B. N. Am. 1858, 433; Cat. N. Am. B. 1859, No. 326.—Coues, Key, 1872, 133; Check List, 1873, No. 153; 2d ed. 1882, No. 220; B. N. W. 1874, 120.—B. B. & R. Hist. N. Am. B. i, 1874, 515, pl. 24, fig. 7.

Centrophanes lapponicus Kaup, 1829.—Ridgw. Nom. N. Am. B. 1881, No. 187.

Calcarius lapponicus Stejn. Proc. U. S. Nat. Mus. 1882, 33.

Hab. Northern North America, breeding in arctic and subarctic districts, in winter migrating very irregularly, south to or beyond 40° (South Carolina, Kentucky, southern Illinois, northern Texas, New Mexico, Colorado, etc.); very rare in Middle Province, and not recorded from Pacific Province.

"Sp. Char. *Male.* Head all round, and neck, black, extending on the jugulum in a crescentic patch; a broad line from above and behind the eye, sides of neck, a patch in the black of hind head, and whole under parts, white; the sides of body streaked broadly with black. A broad half-collar of chestnut on back of neck, separated from the hood narrowly, and from the auriculars and throat broadly, by the white stripe from the eye. Above brownish black, the feathers sharply edged with brownish yellow. Outer tail-feathers white, except the basal portion of inner web, and a shaft streak at end; next feather with a white streak in end, rest black. Legs black; bill yellow, tipped with black. In winter plumage the black and other markings overlaid by rusty and fulvous; beneath whitish. *Female* with the black feathers of head edged with yellowish rusty; the throat white, bordered on the sides and behind by blackish; feathers edged with grayish white, the rufous of nape obscure, and streaked with blackish. Length of male, 6.25; wing, 3.90; tail, 2.80.

"Autumnal specimens, of both sexes, differ in having the pattern of coloration obscured by ochraceous borders to the feathers, and a general rusty cast to the plumage." (*Hist. N. Am. B.*)

This species occurs throughout the State in winter. During severe weather I have seen large flocks at Mount Carmel, flitting in a restless manner over the snow, uttering all the while a peculiar rattling chirrup; and on other occasions, I have observed individuals mixed in with flocks of Shore Larks.

The Lapland Longspur, like the Snow Bunting, breeds in the arctic regions of both continents. The male is said to be a sweet songster, often singing while on the wing.

Calcarius pictus (Swains.)

SMITH'S LONGSPUR.

Popular synonyms. Painted Longspur; Smith's Bunting.

Emberiza (Plectrophanes) picta Sw. & Rich. F. B. A. ii, 1831, 250, pl. 49.

Emberiza picta Aud. Orn. Biog. v, 1839, 91, pl. 400.

Plectrophanes pictus Bp. 1838.—Aud. Synop, 1839, 99; B. Am. iii, 1841, 52, pl. 153.—Baird, B. N. Am. 1858, 434; Cat. N. Am. B. 1859, No. 327.—Coues, Key, 1872, 134; Check List, 1873, No. 134; B. N. W. 1874, 121.—B. B. & R. Hist. N. Am. B. i, 1874, 518, pl. 24, figs. 4, 5.

Centrophanes pictus Cab. 1851.—Ridgw. Nom. N. Am. B. 1881, No. 188.

Calcarius pictus Stejn. Proc. U. S. Nat. Mus. 1882, 33.

Emberiza smithii Aud. B. Am. vii, 1844, 337, pl. 487.

Hab. Great interior plains of North America, breeding from the Yukon, Mackenzie River, and Slave Lake districts for an undetermined distance southward, and migrating in winter to the prairies of the Mississippi Valley and as far south as northwestern Texas

"Sp. Char. *Male.* Spring. Top and sides of head black. A line from bill over the eye, lores, lower and posterior border of the black cheeks, ears, (encircled by black), and a small patch in the nape, white. Entire under parts, and extending round neck to nape (where it bounds abruptly the black of head), buff or light cinnamon-yellow; the under tail-coverts paler; the inside of wings, white. Feathers of upper surface black, edged with yellowish gray; shoulders or lesser coverts and the greater, black; middle white, forming a conspicuous patch. Quills edged externally with white, this involving the whole outer web of outermost primary. Whole of outer and most of second tail-feathers white. Bill dusky; lower mandible and legs yellowish. Length, 5.50; wing, 3.50; tail, 2.75; bill, .45.

"*Female.* The markings of male faintly indicated, but the black and buff wanting. Head above brown, streaked centrally with paler. A narrow dark line on each side the throat, and brownish streaks across the jugulum, and along sides of body. Traces visible of the white marks of the head. Bill and feet as in the male."

"This species is quite similar in form to *P. lapponicus*, although with slenderer bill, and perhaps longer hind claw. While the colors of adult males are very different, the females have a decided resemblance; they may, however, be distinguished in all stages by

the black or dusky legs of *lapponicus* and the yellow of *pictus*, and perhaps by the more dusky upper mandibles of the latter." (*Hist. N. Am. B.*)

Like the Lapland Longspur, this species is only a winter visitor to Illinois. It is by no means so generally distributed as that species, its migrations being almost wholly confined to the open prairie districts.

"Mr. Audubon, in company with Mr. Harris and Mr. Bell, obtained specimens of these birds near Edwardsville, and described them as a new species [*Plectrophanes smithii*]. Mr. Bell states, in regard to these birds, that he found them very abundant on the low prairie near a lake, a few miles from Edwardsville. They were generally in large flocks, and when once on the ground they began to separate. They ran very nimbly, in a manner resembling that of the Grass Finch, and when they arose, which they rarely did unless they were nearly approached, they uttered a sharp click, repeated several times in quick succession, and moved with an easy undulating motion for a short distance and then alighted very suddenly, seeming to fall perpendicularly several feet to the ground. They preferred the roots where the grass was shortest. When in the air they flew in circles, to and fro, for a few minutes, and then alighted, keeping up a constant chirping or call, somewhat like that of the Red-Poll." (BREWER.)

Mr. Nelson records the following regarding his observations on this species in the northwestern portions of the State:

"Common migrant. March 30, 1875, near Calumet Lake, I found a flock containing about seventy-five individuals of this species. Their habits are quite similar to those of *P. lapponicus* while upon the ground, except that while the latter species preferred the wet portions of the prairie, the former were found only about the higher portions. When flushed they invariably uttered a sharp clicking note, rapidly repeated several times. When driven from their feeding place by my approach, they would rise, in a loose flock, and after wheeling about a few times start off in a direct line, gradually rising higher until they disappeared. After a short time their peculiar note would be heard, and darting down from a considerable height they would alight near the place from which they were driven. Although the flocks of *P. pictus* and *P. lapponicus* often became mingled while flying over the prairie, I did not see them alight together."

The breeding range of this species is much more restricted than that of *C. lapponicus*, being confined to the interior of Arctic America, chiefly in the basin of Mackenzie and Anderson rivers, including the region about the Great Bear and Great Slave lakes. In fact, it is emphatically a bird of the great interior valleys of the continent, between the Rocky Mountains on the one side and the Atlantic forest region on the other.

Genus **RHYNCHOPHANES** Baird.

Rhynchophanes Baird, Birds N. Am. 1858, 432. Type, *Plectrophanes mccownii* Lawr.

Gen. Char. Bill stout, conical, the gonys longer than the hind toe, with its angle considerably posterior to the middle of the bill. Maxilla equal to the mandible in depth; mandibular tomium forming a decided angle at the base. Middle toe, with claw, shorter than tarsus, the claw reaching beyond that of the hallux. Tail decidedly shorter than the distance from the carpal joint of the wing to the tips of the tertials.

In the form of the bill of this well-marked genus there is nothing to indicate its near affinity to the genera *Plectrophenax* and *Calcarius;* but in other parts of its organization it evidently approaches much nearer to these forms than any other. The bill is wonderfully similar to that of *Calamospiza*, the only conspicuous difference being its considerably narrower form,—particularly the mandible, as compared with the maxilla. The lateral, as well as the vertical, outlines are very nearly the same, even to the well-marked angle at the base of the mandibular tomium. In other characters, however, the two genera are so different as to warrant their assignment to distinct groups, or subfamilies.

The genus *Rhynchophanes* contains a single species, peculiar to the interior of North America.

Rhynchophanes mccownii (Lawr.)

McCOWN'S LONGSPUR.

Popular synonym. McCown's Bunting.

Plectrophanes mccownii Lawr. Ann. Lyc. N. Y. vi, 1851, 122.—Baird, B. N. Am. 437; Cat. N. Am. B. 1859, No. 330.—Coues, Key, 1872, 134; Check List, 1873, No. 156; B. N. W. 1874, 124.—B. B. & R. Hist. N. Am. B. i, 1874, 523. pl. 24, fig. 1.

Rhynchophanes mccowni Baird.—Ridgw. Nom. N. Am. B. 1881, No. 190.

Hab. Great Plains of the United States, breeding northward (in Dakota, Wyoming, etc.) and migrating south in winter through Colorado, Kansas, Texas, New Mexico, and Arizona, to northern Mexico; occasional winter visitor to prairies of Illinois.

"SP. CHAR. *Male in spring.* Top of head, a broad stripe each side the throat from lower mandible, and a broad crescent on jugulum, black; side of head including lores and band above the eye, throat, and under parts, ashy white; ear-coverts bordered above and behind by blackish, running out at the maxillary stripe. Breast just behind the black crescent and sides, showing dark bases of feathers. Upper parts ashy, tinged with yellowish on the mandible, and streaked with dusky; least so on nape and rump. Lesser wing-coverts ashy; median, chestnut-brown, with blackish bases sometimes evident; the quills all bordered broadly externally with whitish, becoming more ashy on secondaries. Tail-feathers white except at the concealed bases and the ends, which have a transverse (not oblique) tip of blackish; the outermost white to the end; the two central like the back. Bill dark plumbeous; legs blackish. In winter, the markings more or less obscured; the bill and legs more yellowish.

"*Female* lacks the black markings, which, however, are indicated obsoletely as in other *Plectrophanes:* there is no trace of chestnut on the wings, nor the streaks on the breast. Length, 5.50; wing, 3.60; tail, 2.50; bill, .46.

"This species varies considerably in markings, but is readily recognized among other *Plectrophanes* in all stages by short hind toe, very stout bill, and the transverse dark bar at the end of all tail-feathers except the inner and outer. (*Hist. N. Am. B.*)

McCown's Longspur is one of several very peculiar birds which together characterize the avi-fauna of the Great Plains of North America, its more prominent associates in this distinction being the Lark Bunting (*Calamospiza melanocorys*), Chestnut-collared Longspur (*Calcarius ornatus*), Baird's Bunting (*Centronyx bairdii*), Clay-colored Sparrow (*Spizella pallida*), Leconte's Sparrow (*Coturniculus lecontei*), and Harris's Sparrow (*Zonotrichia querula*). These, together with the subject of the present article, and a few species not named, characterize a Campestrian Province, which, so far as its avian fauna is concerned, is even more distinct from the Middle Province than is the Pacific Province.*

McCown's Longspur is an abundant species during summer on the great plains of Dakota, Montana, and Wyoming, to the northward and southward of which its breeding range extends for an undetermined distance. In winter it migrates south to the prairies and plains of Texas, New Mexico, and Arizona, as well as to the table-lands of Mexico. In Illinois it is, so far as known, merely a straggler during its migrations, or in winter, three specimens having been taken in January, 1877, at Champaign, Champaign county, as announced by Mr. H. K. Coale in the "Nuttall Bulletin" for April, 1877, p. 52.

*Writers on the zoö-geographical divisions of North America have almost all divided the continent into three "Provinces;" viz., an Eastern, a Middle, and a Pacific. These divisions seem to me untenable, however, and I would allow only two primary longitudinal divisions; an Eastern and a Western, the latter with three subdivisions, which may be termed, respectively, the Pacific, the Rocky Mountain (or Middle), and the Campestrian districts.

Subfamily **PASSERINÆ.**

"The introduction into the United States at so many distant points, of the European House Sparrow (*Pyrgita domestica*) renders it necessary to introduce it with any work treating of the birds of North America, although totally different in so many features from our own native forms. * * * In some respects similar to certain *Coccothraustinæ*, in the short tarsi and covered nostrils, the wings are shorter and more rounded, the sides of the bill with stiff bristles, etc. The much longer, more vaulted bill, weaker feet, and covered nostrils, distinguish it from *Spizellinæ*." (*Hist. N. Am. B.*)

Genus **PASSER** Brisson.

Passer Brisson, Orn. iii, 1760, 72. Type, *Fringilla domestica* Linn.

"Gen. Char. Bill robust, swollen, without any distinct ridge; upper and under outlines curved; margins inflexed; palate vaulted, without any knob; nostrils covered by sparse, short, incumbent feathers; side of bill with stiff, appressed bristles. Tarsi short and stout, about equal to or shorter than the middle toes; claws short, stout, and considerably curved. Wings longer than tail; somewhat pointed. Tail nearly even, emarginated, and slightly rounded." (*Hist. N. Am. B.*)

Passer domesticus (Linn.,

EUROPEAN HOUSE-SPARROW.

Popular synonyms. English Sparrow; European Sparrow; House Sparrow.

Fringilla domestica Linn. S. N. ed. 10, i, 1758, 183; ed. 12, i, 1766, 323.

Passer domesticus Schaeff. Mus. Or. 1789, 24.—Coues, Key, 1872, 146; 2d ed. 1884, 344; Check List, 1873, No. 187; 2d ed. 1882, No. 192.

Pyrgita domestica Cuv. Règ. An. 2d ed. i, 1729, 439.—B. B. & R. Hist. N. Am. B. i, 1874, 525, pl. 23, fig. 12.

Hab. Whole of Palæarctic Region. Introduced into and naturalized in North America Australia, and other countries.

"Sp. Char. *Male.* Above chestnut-brown; the interscapular feathers streaked with black on inner webs; the top of head and nape, lower back, rump, and tail-coverts, plain ashy; narrow frontal line, lores, chin, throat, and jugulum black; rest of under parts grayish, nearly white along median region. A broad chestnut-brown stripe from behind eye, running into the chestnut of back; cheeks and sides of neck white; outside of closed wing, pale chestnut-brown, with a broad white band on the middle coverts, and behind showing the brown quills; the lesser coverts dark chestnut, like the head stripe. Tail dark brown, edged with pale chestnut. Bill black; feet reddish; iris brown.

"*Female.* Duller of color, and lacking the black of face and throat; breast and abdomen reddish ash; cheeks ashy; a yellow-ochre band above and behind the eyes, and across the wings. Head and neck above brownish ash; body above reddish ash, streaked longitudinally with black.

"*Male in winter.* The colors generally less distinct. Length, 6.00; wing, 2.85; tail, 2.50; tarsus, .70; middle toe and claw, .60.

"The House Sparrow of Europe has been introduced into so many parts of the United States as to render it probable that at no distant day it will have become one of our most familiar species. Brought over to the New World within a comparatively few years, it has commenced to multiply about the larger cities, especially in the environs of New York, as also about Portland, Boston, Newark, and Philadelphia * * * One thousand birds were let loose in the public squares of Philadelphia in the spring of 1869." (*Hist. N. Am. B.*, 1874.)

Concerning this unmitigated pest we have little to say, further than to bewail the misfortune of its introduction, and to plead for its extermination. It is in every respect a first-class nuisance, to be classed along with the house-rat and other noxious vermin.

Subfamily **SPIZELLINÆ**.—The American Sparrows.

Char. Bill variable, usually almost straight; sometimes curved. Commissure generally nearly straight, or slightly concave. Upper mandible wider than lower. Nostrils exposed. Wings moderate; the outer primaries not much rounded. Tail variable. Feet large; tarsi mostly longer than the middle toe.

The species are usually small, and of dull color, though frequently handsomely marked. Nearly all are streaked on the back and crown, often on the belly. None of the United States species have any red, blue, or orange, and the yellow, when present, is as a superciliary streak, or on the elbow edge of the wing.

In the arrangement of this subfamily, as of the others belonging to the *Fringillidæ*, we do not profess to give anything like a natural system, but merely an attempt at a convenient artificial scheme by which the determination of the genera may be facilitated.

A. Tail small and short, considerably or decidedly shorter than the wings, owing either to the elongation of the wing or the shortening of the tail. Lateral toes shorter than the middle without the claws. Species streaked above and below. (**Ammodrameæ.**)

Ammodramus. Tarsus not longer than middle toe, with claw. No white outer tail-feathers.

a. Subgenus *Ammodramus*. Bill slender, the depth at the base less than half the culmen. Tail graduated, the feathers acute. Outstretched feet reaching to or beyond tip of tail.

b. Subgenus *Coturniculus*. Bill stouter, the depth at base more than half the culmen (except in *C. lecontei*). Tail graduated or double-rounded, the feathers narrow and acute. Outstretched feet falling short of tip of tail.

d. Subgenus *Centronyx*. Tail deeply emarginate, two and a half times as long as the tarsus, the feathers narrow and attenuated, as in *Coturniculus*. Hind claw nearly or quite as long as its digit.

e. Subgenus *Passerculus*. Tail slightly emarginate, three times as long as the tarsus, the feathers broad and scarcely attenuate, though acute at tips. Hind claw shorter than its digit.

Poocætes. Tarsus longer than middle toe, with claw. Outer tail-feathers partly white.

B. Tail longer and broader; nearly or quite as long as, sometimes a very little longer than, the wings, which are rather lengthened. The primaries considerably longer than the secondaries. None of the species streaked beneath, when adult, and only the back and crown, or back alone, streaked above. (**Spizelleæ.**)

a. Tail rounded or slightly graduated.

Chondestes. Tail considerably graduated. Lateral toes considerably shorter than the middle toe, without its claw. Wings very long, decidedly longer than the tail, reaching the middle of the tail. First quill longest. Head broadly striped with chestnut. Back streaked. White beneath. A white blotch on the end of the tail-feathers.

Zonotrichia. Tail rounded. Wings moderate, about as long as the tail, reaching about over the basal fourth of the tail; first quill less than the second to fourth. Feet large. Head striped with black and white or with brown and ochraceous. Back streaked.

Junco. Tail very nearly equal to the wings, slightly double-rounded. Outer toe rather longer than inner, reaching the middle claw. No streaks anywhere except in young; black or ash-color above; belly white; with or without a rufous back and sides. Outer tail-feathers white.

Amphispiza. Tail lengthened, rounded or slightly graduated; the feathers unusually broad to the end. Bill slender. Wings about as long as the tail, reaching but little beyond its external base. Tertials broad, and, with the secondaries, rather lengthened. Second to fifth quills nearly equal, and longest. Tail black. Ashy brown above; white beneath. Sides of head with stripes of black or grayish and white.

b. Tail decidedly forked; a little shorter than the wing, sometimes a little longer.

Spizella. Size rather small. Wings long. Lower mandible largest. Uniform beneath, or with a pectoral spot or the chin black.

C. Tail lengthened and graduated; decidedly longer than the wings, which are very short, scarcely extending beyond the external base of the tail. Feet reaching but little beyond the middle of the tail. Species all streaked above; streaked or nearly unicolor beneath. No white on wings or tail. Outer lateral toe the longer. First quill not the shortest of the primaries. (**Melospizeæ.**)

Melospiza. Culmen and commissure nearly straight. Claws stout; hinder one as large as its digit. Tail-feathers rather broad. Body streaked beneath (except in *M. georgiana*).

Peucæa. Culmen and commissure curved. Claws weak; hinder one not much curved, decidedly shorter than its digit. Tail-feathers narrow. Without streaks beneath, excepting a narrow submaxillary stripe.

D. Tail rather short, and much graduated; longer than the wings; the midrib more median. Culmen curved. Tarsus considerably longer than middle toe. Outer toe longer. But little difference in the length of the quills; the outer ones much rounded; even the second quill is shorter than any other primary except the first. (**Embernagreæ.**)

Embernagra. Color, plain olive-green above.

Genus **AMMODRAMUS** Swainson.

Subgenus **Ammodramus.**

Ammodramus Swainson, Zoöl. Jour. iii, 1827, 348. Type, *Oriolus caudacutus* Gmel.

"Gen. Char. Bill very long, slender, and attenuated, considerably curved towards the tip above. The gonys straight. A decided lobe in middle of cutting edge of upper bill. The legs and toes are very long and reach considerably beyond the tip of the short tail. The tarsus is about equal to the elongated middle toe; the lateral toes equal, their claws falling considerably short of the base of the middle one; the hind claw equal to the lateral one. Wings short, reaching only to the base of the tail; much rounded; the secondaries and tertials equal, and not much shorter than the primaries. The tail is rather shorter than the wings, and graduated laterally; each feather stiffened, lanceolate, and acute.

"*Color.* Streaked above and across the breast; very faintly on the sides.

"The essential characters consist in the slender and elongated bill; the long legs reaching considerably beyond the tail, with the lateral claws falling considerably short of the middle one; and the very short rounded wings, rather longer than the cuneate tail, with its stiffened and lanceolate feathers." (*Hist. N. Am. B.*)

Only one of the three known species of this genus has been taken in Illinois. In view, however, of the possible occurrence of a second (*A. maritimus*), its characters, together with those of the other, are given in the following synopsis:

Common Characters. Above olivaceous or ashy, the crown washed with brown laterally, the dorsal feathers darker centrally; beneath white, tinged across the jugulum with ochraceous or ashy; jugulum streaked; a dusky "bridle" on each side of the throat, above it a malar stripe of ochraceous or white.

1. **A. caudacutus.** *Adult:* Above mixed olive, gray, and brown; the outer webs of back feathers edged with olivish gray or whitish, and often with darker streaks; crown usually with a brown suffusion, and streaked with black laterally. Superciliary stripe, maxillary stripe, and whole jugulum, ochraceous, the latter more or less streaked; abdomen unstreaked white; edge of wing light yellow. *Young:* Above fulvous brown and ochraceous, streaked with black; crown mostly black, with a median stripe of fulvous streaks. Beneath entirely ochraceous, the sides of the jugulum streaked.

   α. *caudacutus.* Wing, 2.20–2.40; tail, 2.15–2.40; bill, .30–.35. Atlantic seacoast, from Florida to Maine.

   β. *nelsoni.* Wing, 2.10; tail, 2.05; bill, .30. Bill more slender; colors much deeper, and markings much better defined. Fresh water marshes of United States, chiefly in Mississippi Valley.

2. **A. maritimus.** Above olivaceous gray, with ashy gloss on the back; beneath grayish white, very indistinctly streaked on the jugulum and sides of breast with grayish; edge of wing, and supraloral stripe gamboge-yellow. Wing, 2.30–2.65; tail, 2.35–2.65.

Ammodramus caudacutus nelsoni (Allen).

NELSON'S SPARROW.

Popular synonym. Nelson's Sharp-tailed Finch.

Ammodromus caudacutus var. *nelsoni* ALLEN, Proc. Boston Soc. xvii, March, 1875, 93.—NELSON, Bull. Essex Inst. viii, 1876, 107, 152; Bull. Nutt. Orn. Club, July, 1876 40.

Ammodromus caudacutus nelsoni RIDGW. Nom. N. Am. B. 1881, No. 201*a*.—COUES, 2d Check List, 1882, No. 241; 2d Key, 1884, 368.

HAB. Mississippi Valley (Calumet marshes, and vicinity of Warsaw, Illinois; eastern Kansas, etc.); salt marshes of Atlantic coast during migrations.

SP. CHAR. *Adult.* Pileum bluish gray or olive-gray medially, umber-brown laterally, the lateral stripes more or less streaked with black. A broad superciliary stripe deep ochraceous, connected behind the auriculars with a broad maxillary stripe of the same color. Auriculars grayish, with a dusky line along upper edge, connecting with a distinct black streak beneath hinder part of the ochraceous superciliary stripe. Scapulars and interscapulars bright olive-brown, the outer webs broadly edged with grayish white, separated from the brown by a blackish line. Tertials dusky, bordered with rusty whitish or pale rusty. Rump uniform olive-brown. Rectrices light raw-umber-brown, darker along shafts. Chin, throat, breast, sides, flanks, and crissum ochraceous, the jugulum, breast, sides, and flanks streaked with dusky. Wing, 2.20–2.30; tail, 1.95–2.10.

This inland race differs from the coast form principally in its somewhat smaller size (the bill especially) and brighter coloration, the colors being richer and the markings more sharply contrasted.

So little is known either of its habits or distribution, that all the information we have to offer is the following, from Mr. Nelson's list of the birds of northwestern Illinois. (*Bull. Essex Inst.*, Vol. VIII., 1876, p. 107):

"First obtained September 17, 1874, in the Calumet Marsh, where it was abundant at the time. The 12th of June, 1875, I saw several of these birds in the dense grass bordering Calumet Lake, where they were undoubtedly breeding. The 1st of October, 1875, I again found them abundant on the Calumet Marsh, and also found them numerous in the wild rice bordering Grass Lake, Lake county, Illinois, the 10th of November the same year. Prof. S. A. Forbes has taken them on the Illinois River during the migrations, and Dr. Hoy has obtained a single specimen at Racine. From the numbers which visit us in the fall, they must breed in abundance north of this State. They are difficult to obtain, as they take refuge in the dense marsh grass upon the first alarm. Occasionally one mounts a tall reed and utters a short, unmusical song, slightly resembling that of the Swamp Sparrow (*M. palustris*)."

Subgenus **Coturniculus** Bonaparte.

Coturniculus Bonap. Geog. and Comp. List, 1838, 32. Type, *Fringilla passerina* Wils.

"Gen. Char. Bill very large and stout (except in *C. lecontei*); the under mandible broader, but lower than the upper, which is decidedly convex at the basal portion of its upper outline. Legs moderate, apparently not reaching to the end of the tail. The tarsus appreciably longer than the middle toe; the lateral toes equal, and with their claws falling decidedly short of the middle claw; the hind toe intermediate between the two. The wings are short and rounded, reaching to the base of the tail; the tertiaries almost as long as the primaries; not much difference in length in the primaries, although the outer three or four are slightly graduated. The tail is short and narrow, shorter than the wing (except in *C. lecontei*), graduated laterally, but slightly emarginate; the feathers all lanceolate and acute, but not stiffened, as in *Ammodramus*.

"This genus agrees with *Passerculus* in the short and narrow tail. The wings are much shorter, and more rounded; the feet shorter, especially the middle toe, which is not as long as the tarsus. The tail-feathers are more lanceolate. The bill is much longer, and more swollen at the base.

"The essential characters * * consist in the swollen convex bill; the short toes, compared with the tarsus; the short and rounded wings; and the very small, narrow, slightly graduated tail, with its lanceolate, acute feathers (except in the South American *C. manimbe*).

"In some respects there is a resemblance to *Ammodramus*, in which, however, the bill is very much more slender; the wings are shorter, and more rounded; the tail feathers much stiffer, and even more lanceolate; the toes extending beyond the tip of the tail; the middle toe rather longer than the tarsus, instead of considerably shorter."

"*C. lecontei* has the same general form, but a much smaller bill." (*Hist. N. Am. B.*)

The three North American species differ very strikingly from one another in form, and may be readily distinguished by proportions alone, as follows:

a. Tail much shorter than the wing, double-rounded. Primaries extending beyond the tips of the largest tertials for about .40 of an inch.

1. **C. passerinus.** Bill stout, the culmen slightly depressed in the middle portion. Wing about 2.50; tail, 1.90; culmen, .50; depth of bill, .25; tarsus, .80.

b. Tail about equal to, or even longer than the wing, graduated. Primaries extending very little beyond tips of longest tertials.

2. **C. henslowi.** Bill very stout, the culmen not depressed in the middle. Wing about 2.15; tail, 2.10; culmen, .50; depth of bill .30; tarsus, .70.

3. **C. lecontei.** Bill very small and slender, the culmen depressed in the middle portion. Wing about 2.10; tail, 2.30; culmen, .45; depth of bill, .20; tarsus, .65.

By coloration, they may be distinguished as follows:

COMMON CHARACTERS. Crown and back streaked with black upon an ashy, olive, or chestnut ground; beneath whitish, tinged across the breast with ochraceous or ashy, plain, or with blackish streaks on the breast. A light superciliary stripe.

A. A dusky streak on each side of the light malar stripe.

1. **C. henslowi.** Bill very robust, .28–.32 from nostril and .25–.28 deep at base. *Adult:* Head grayish ochraceous, lighter beneath; a stripe of black streaks on each side of the crown; also a post-auricular black streak, and a less distinct black streak on each side of the lighter malar stripe; breast streaked with black.

B. No dusky streak on either side of light malar stripe.

2. **C. lecontei.** Bill very narrow (much as in *Ammodramus caudacutus*), .25–.30 from nostril and .20 deep at base. *Adult:* Head fine buff, the auriculars, lores, and posterior two thirds of the middle stripe on the crown, grayish white; a black stripe on each side of crown; sides (but not breast) streaked with black. *Young:* above ochraceous, with broad streaks of black on the back; medial stripe of crown entirely buff; beneath white, the jugulum buffy, narrowly streaked with dusky.
3. **C. passerinus.** Bill robust, .28–.32 from nostril, and .25–.30 deep. *Adult:* Head, throat, jugulum, and sides ochraceous buff; edge of wing gamboge-yellow; a yellow spot above the lore; no streaks on jugulum on sides. Crown chestnut-brown or black, divided by a medial, narrower stripe of buff or pale gray. *Young:* Superciliary and middle crown stripes pale grayish; beneath pale buffy; the jugulum streaked with dusky; no distinct yellow on lore or edge of wing.

Ammodramus savannarum passerinus (Wils.)

GRASSHOPPER SPARROW.

Popular synonyms. Yellow-winged Sparrow; Grass-bird; Ground-bird; Grasshopper-bird.

Fringilla passerina WILS. Am. Orn. iii, 1811, 76, pl. 26, fig. 5.—AUD. Orn. Biog. ii, 1834, 180; v, 1839, 497, pl. 130.

Emberiza passerina AUD. Synop. 1839, 103; B. Am. iii, 1842, 73, pl. 162.

Coturniculus passerinus BONAP. 1838.—BAIRD, B. N. Am. 1858, 450; Cat. N. Am. B. 1859, No. 338.—COUES, Key, 1872, 137; Check List, 1873, No. 162; 2d ed. 1882, No. 234; B. N. W. 1874, 131.—B. B. & R. Hist. N. Am. B. i, 1874, 553, pl. 25, fig. 4.—RIDGW. Nom. N. Am. B. 1881, No. 198.

Fringilla savannarum GMEL.—NUTT. Man. i, 1832, 494; 2d ed. i, 1840, 570.

HAB. Eastern United States, breeding throughout, but wintering in Southern States, Cuba, Porto Rico, eastern Mexico, and south to Costa Rica.

"SP. CHAR. Feathers of the upper parts brownish rufous or chestnut-brown, margined narrowly and abruptly with ash-color; reddest on the lower part of the back and rump; the feathers all abruptly black in the central portion; this color visible on the interscapular region, where the rufous is more restricted. Crown blackish, with a central and superciliary stripe of yellowish tinged with brown, brightest in front of the eye. Bend of the wing bright yellow, lesser coverts tinged with greenish yellow. Quills and tail-feathers edged with whitish; tertiaries much variegated. Lower parts brownish yellow or buff, nearly white on the middle of the belly, darkest on the jugulum. The feathers of the upper breast and sides of the body with obsoletely darker centres, these sometimes wanting. Sides of breast against bend of wing with a few black streaks, usually concealed. Length about 5 inches; wing, 2.40; tail, 2.00.

"The young of this species has the jugulum and sides of the breast streaked with black, much more distinct than in the adult,

and exhibiting a slight resemblance to *C. henslowi*. The upper parts are less varied.

"Specimens from the Far West have the bill more slender, the reddish of the back considerably paler, the dark markings of the back restricted, the light stripe on the head with scarcely any yellow, a decided spot in front of the eye quite yellow, and little or no ochraceous on the breast.

"The young bird, with streaked jugulum, may be most readily distinguished from *C. henslowi* by the grayer plumage without any shade of chestnut or greenish yellow, the sparseness of streaks on the side, the absence of the two mandibular dusky stripes, and the broad dusky centres of the middle tail-feathers." (*Hist. N. Am. B.*)

This little bird is abundant in all cultivated portions of the State, as well as on the open prairie. To the rural population it is known as the "Grass-bird," "Ground-bird," or "Grasshopper-bird," the latter appellation being derived from its grasshopper-like song, which it utters from the end of a fence-stake, the top of a tall weed-stalk, or as it sits upon the summit of a haycock in the meadow. The greater portion of its time is passed in the grass, in which it runs from the intruder, unseen, like a mouse; or, if pressed too closely, rises suddenly and flies a greater or less distance in a zigzag manner, exceedingly provoking to the collector, who finds it a difficult mark to hit.

Ammodramus henslowii (Aud.)

HENSLOW'S SPARROW.

Popular synonym. Henslow's Bunting.

Emberiza henslowi AUD. Orn. Biog. i, 1831, 360; v, 1839, 498, pl. 77; Synop. 1839, 104; B. Am. iii, 1841, 75, pl. 163.

Fringilla henslowi NUTT. Man. 2d ed. i, 1840, 571.

Coturniculus henslowi BP. 1838.—BAIRD, B. N. Am. 1858, 451; Cat. N. Am. B. 1859, No. 339.—COUES, Key, 1872, 137; Check List, 1873, No. 163; 2d ed. 1882, No. 236; B. N. W. 1874, 133 ("*henslowii*").—B. B. & R. Hist. N. Am. B. i, 1874, 550, pl. 25, fig. 5.—RIDGW. Nom. N. Am. B. 1881, No. 199.

HAB. Eastern United States, breeding north to Massachusetts, northern Illinois, etc.; winters in Southern States. West to Loup Fork of the Platte.

"SP. CHAR. Upper parts yellowish brown, the hood, neck, and upper parts of back tinged with greenish yellow. Interscapular feathers dark brown, suffused externally with bright brownish red; each feather with grayish borders. Tertiaries, rump and tail-feathers abruptly dark chestnut-brown, darkest centrally, paler externally, and narrowly margined with gray. Crown with a broad, black-spotted stripe on each side; these spots continued down to the back. Two narrow black mandibular stripes and one postocular on each side of the head, and an obscure black crescent or spot behind the auriculars.

Under parts light brownish yellow, paler on the throat and abdomen. The jugulum, upper part of the breast, and the sides of the body conspicuously streaked with black. Edge of wing yellow. A strong tinge of pale chestnut on the wings and tail. The median tail-feathers and upper coverts chestnut or rufous brown, with sharply defined shaft-streaks of black. Length, 5.25; wing, 2.15; tail, 2.15." (*Hist. N. Am. B.*)

This species is related to *C. passerinus*, but readily distinguished by the well-marked streaks on breast and sides, the greenish yellow, not chestnut-brown, of head and nape, and the two mandibular dusky stripes. The middle tail-feathers are reddish with only a very narrow sharply defined median shaft-streak of black, instead of having the greater portion of the centre dusky with scalloped edges.

Henslow's Sparrow is an exceedingly common or even abundant species in Illinois, but is much more local than its relative, the Yellow-winged Sparrow. The writer first met with it on Fox Prarie, Richland county, in June, 1871, having his attention attracted to it by its peculiar note. It was very abundant, the males being perched on tall weed-stalks, uttering incessantly their rude and feeble, but emphatic "song" sounding like *pil'lut*, or *se'wick*, the head being thrown back and the tail inclining forward underneath the bird, in the manner of *C. passerinus*. Twelve years later it was exceedingly numerous on the small remaining patch of open prairie (160 acres in extent) in the same locality, and also in a similar bit of prairie of equal extent which marked the last vestige of the once extensive but since populous and well-cultivated Sugar Creek Prairie, several miles to the southeast.

These birds lie very close, allowing themselves to be almost trodden on before flying; and, notwithstanding a very large number of females were shot which had evidently been startled from their nests, only one nest could be found. They had probably run some distance through the grass before flying, thus rendering search fruitless.

Mr. Nelson states that in Cook county it is a rather common resident on the prairies, arriving May 12 to 20, and leaving the first of September. In Richland county the writer found it exceedingly numerous during the latter part of October, 1882, in company with smaller numbers of *C. lecontei*, inhabiting the dead grass in the damper portions of the meadows. Mr. H. K. Coale writes me that he found it to be a common summer resident in a certain piece of wet prairie overgrown with bushes at Toleston, Lake county, Indiana.

During the summer of 1879, the writer found this species to be very common in Fairfax county, Virginia, about five miles from Washington. Walking along the road at dusk, a few stars having already made their appearance, he was surprised to hear the peculiar note which he had last heard on Fox Prairie, eight years previously. Soon numbers were heard on every hand, the locality being a rather narrow valley between low hills, the lower ground being chiefly damp meadow-land. Returning a few days after with a friend, several of the birds were secured. A nest found in this locality the following summer is thus described by Mr. P. L. Jouy, of Washington, in the "Nuttall Bulletin" for January, 1881, pp. 57, 58:

"Nest rather rude and irregularly shaped, composed externally of coarse grass, lined with exceedingly fine grass-tops circularly disposed and well finished, but without any horse-hair; no other material than grass was used in its construction. The nest is about four inches in diameter, about two inches in heighth, and two inches inside diameter; it was placed in the centre of a large clump of wild clover (*Trifolium agrarium*), and rested directly on the ground without any appearance of a cavity. The clover had grown up about a foot or more in height and completely surrounded the nest, which was only discovered by parting it. The female was secured as she flew from the nest. The eggs, four in number, are much blotched and speckled all over with a mixture of madder-brown and sepia, the color becoming more confluent on the larger end; there are also a few dashes and dots of very dark sepia, almost black, scattered among the spots. One of the eggs has a number of large blotches of a lighter tint than the spots scattered all over it so as to almost form a ground tint for the spots. The ground color is a delicate greenish white. The measurements, in hundredths of inches, are as follows: .75×.60, .75×.58, .75×.56, .75×.60. The eggs, taken June 3, contained large embryos within four or five days of hatching. As I took full-fledged young last year on the 12th of July, they undoubtedly raise two broods in a season.

"The above described nest and eggs were taken in the locality where Mr. Ridgway found the birds last year (see this Bulletin, Vol. IV., p. 238), near Falls Church, Fairfax Co., Va. They are more or less common in all suitable places, probably a dozen pairs breeding in this and the adjoining meadows.

"Since writing the above, two fully-fledged young birds have been taken (June 6) in the same place. The birds have been also seen

and heard singing at Ball's Cross Roads, in Virginia, about two miles nearer the District than the other locality. Besides the characteristic note of *see-wick*, they have quite a song, which may fairly be represented by the syllables *sis-r-r-rit-srit-srit*, with the accent on the first and last parts. This song is often uttered while the bird takes a short flight upward; it then drops down again into the tangled weeds and grasses, where it is almost impossible to follow it."

Ammodramus leconteï (Aud.)

LECONTE'S SPARROW.

Popular synonyms. Leconte's Bunting; Yellow Sparrow (Manitoba).

Emberiza leconteii Aud. B. Am. viii, 1843, 338 pl. 488.

Coturniculus lecontii Bp. 1850.—Baird, B. N. Am. 1858 481; Cat. N. Am. B. 1859, No. 340.—Coues, Key, 1872, 137; Check List, 1873, No. 164; 2d ed. 1882, No. 237.—B. N. W. 1874, 135.—B. B. & R. Hist. N. Am. B. i, 1874, 552, pl. 25, fig. 6.—Ridgw. Nom. N. Am. B. 1881, No. 200.

Hab. Eastern portion of the Great Plains of the United States, from Manitoba (in summer) to central Texas (in winter). In winter migrating through the prairie districts of the Mississippi Valley to South Carolina, Alabama, and Florida.

Sp. Char. Bill much more slender than *C. henslowi*. First quill longest, the rest diminished rapidly. Tail emarginate and rounded, with the feathers acute. Upper parts light yellowish red, streaked with brownish black; the margins of the feathers and scapulars pale yellowish white. Tail-feathers dusky, margined with light yellowish. Lower parts, with the cheeks and a broad band over the eyes, fine buff. Medial line yellowish anteriorly, nearly white behind. The buff extending to the femorals and along the sides, streaked with brownish black. Throat, neck, and upper parts of the breast, without any streaks, and plain buff.

Adult male (No. 65,815, U. S. Nat. Mus.). Ground-color of the head white, tinged with buff on the maxillæ, and with ash on the auriculars; crown with two broad black stripes, separated by a narrow medial one of whitish; nuchal feathers bright rufous, edged with ashy white, and shafted with black; dorsal feathers black, broadly edged exteriorly with white, and interiorly narrowly skirted with rufous. Beneath entirely white, tinged on the throat with buff, and streaked on the sides—from the breast to the flanks—with black. Length, 5.00; extent, 7.10; wing, 2.10; tail, 2.00; culmen, .42; tarsus, .68. (August 19; plumage much worn and faded.)

Adult female (No. 65,814, U. S. Nat. Mus.). Resembling the male, but, being in less abraded plumage, the colors more pronounced. The band is deep buff (just as in *Ammodramus caudacutus*), the auriculars and lores distinctly grayish white, and the medial stripe of the crown ashy white except the anterior third, which is buff. On the lower parts, the whole lower side of the head, and the entire breast, sides, flanks, and tibiæ, are deep buff, the sides sharply streaked with black. The abdomen anal region and crissum are pure white, in marked contrast. Length, 5.00; extent, 7.00; wing, 2.00; tail, 2.10; culmen, .45; tarsus, .70.

Young. Ground-color above dull buff, below white; the pattern of the old birds seen in the markings, which, however, are pure black, all reddish and brown tints being absent—except on the wings and tail, which are nearly as in the adult.

In its unspotted breast, the rufous feathers of the hind-neck, the absence of submalar stripes, and apparently in the markings of the wings, it is most like *C. passerinus*. Although the middle tail-feathers

have the narrow stripe of *C. henslowi*, the bill is much smaller, as stated by Audubon, than in the others, and is distinctly bluish. The vertical stripe is deep buff anteriorly, instead of buff throughout, and the superciliary stripe is continuously buff, instead of yellow anterior to, and ashy behind, the eye. In the comparative length of wing and tail, it is most nearly related to *henslowi*, but the bill is very much narrower than in either.

This elegant little sparrow is, in some localities at least, an abundant migrant in Illinois. In the latter part of October, 1882, I found it numerous in meadows on Sugar Creek Prairie, Richland county, in company with *C. henslowi*, but preferring the rank grass near streams. It resembled the latter species in its actions, being difficult to flush and flying in a very zigzag manner, but was readily distinguished by its more slender build and conspicuously lighter or more ochraceous coloration. But few specimens have as yet been taken in the northeastern portion of the State. Mr. Nelson, in his catalogue, mentions it as follows:

"A rare migrant. I obtained a fine specimen May 13, 1875, at Riverdale, Illinois, and by my notes I see that a second specimen was observed the 21st of the same month near where the first was obtained. The specimen in my possession was flushed from a small depression in the prairie near the Calumet river, where the moisture had caused an early growth of coarse grass, about three inches in height. After darting off in an erratic course a few rods, it suddenly turned, and alighting ran rapidly through the grass, from which it was with difficulty started again and secured."

Mr. Chas. K. Worthen, of Warsaw, writes me as follows concerning this species:

"I have taken in the last two years, on the prairie here, some twenty specimens; have taken them both in fall and spring, as well as during the summer, and am satisfied they breed here, though I have not been able to find their nests or eggs. I have found them on low swampy prairies in the Mississippi bottoms, and on dry bluffs; but generally in swampy or marshy ground." (See "Nuttall Bulletin," January, 1880, p. 32.)

Subgenus **Passerculus** Bonaparte.

Passerculus Bonap. Comp. List Birds, 1838 33. Type, *Fringilla savanna* Wils.

"Gen. Char. Bill moderately conical; the lower mandible smaller; both outlines nearly straight. Tarsus about equal to the middle toe. Lateral toes about equal, their

claws falling far short of the middle one. Hind toe much longer than the lateral ones, reaching as far as the middle of the middle claw; its claws moderately curved. Wings unusually long, reaching to the middle of the tail, and almost to the end of the upper coverts. The tertials nearly or quite as long as the primaries; the first primary longest. The tail is quite short, considerably shorter than the wings; as long as from the carpal joint to the end of the secondaries. It is emarginate, and slightly rounded; the feathers pointed and narrow." (*Hist. N. Am. B.*)

The essential characters of this genus lie in the elongated wings (longer than the tail), the tertials equal to the primaries, the first quill almost longest. The legs are long, the outstretched toes reaching to the end of the tail; the lateral toes considerable shorter than the middle, which is not much longer than the hinder. The tail is short, narrow, and emarginate; the feathers acute.

Ammodramus sandwichensis savanna (Wils.)

SAVANNA SPARROW.

Popular synonyms. Grass Bird; Ground Bird.

Fringilla savanna Wils. Am. Orn. iii, 1811, 55, pl. 22, fig. 2; iv, 1811, 72, pl. 34, fig. 4.—Nutt. Man. i, 1832, 489.—Aud. Orn. Biog. ii, 1834, 63; v, 1839, 516, pl. 199.

Emberiza savanna Bp. 1838.—Baird, B. N. Am. 1858, 442; Cat. N. Am. B. 1859, No. 332.—Coues, Key, 1872, 135; Check List 1873, No. 159; B. N. W. 1874, 127.—B. B. & R. Hist. N. Am. B. i, 1874, 534, pl. 24, fig. 8.

Passerculus sandwichensis savanna Ridgw. Nom. N. Am. B. 1881, No. 193 *a*.—Coues, 2d Check List, 1882, No. 227.

Hab. Eastern North America, breeding chiefly north of, and wintering south of, the parallel of 40°; Cuba. (The typical race of this species inhabits the north Pacific coast, from Vancouver Island to Unlashka. It is similar in colors to *savanna*, but is decidedly larger. In other parts of western North America, including Alaska, with the exception of the coast district, the smaller, paler, and more slender-billed *P. sandwichensis alaudinus* replaces both the other forms.)

"Sp. Char. Feathers of the upper parts generally with a central streak of blackish brown; the feathers of the back with a slight rufous suffusion laterally; the feathers edged with gray, which is lightest on the scapulars, and forms there two gray stripes. Crown with a broad median stripe of yellowish gray. A superciliary stripe from the bill to the back of the head, eyelids and edge of the elbow, yellow, paler behind. A yellowish white mandibular stripe curving behind the ear-coverts, and margined above and below by brown. The lower margin is a series of thickly crowded spots on the sides of the throat, which are also found on the sides of the neck, across the upper part of the breast and on the sides of the body; a dusky line back of the eye, making three on the side of the head (including the two mandibular). A few faint spots on the throat and chin. Rest

of under parts white. Length, 5.50; wing, 2.70; tail, 2.10. *Young*. Ground-color of the upper parts (except wings and tail) light ochraceous, more brownish on top of head, upper part of back, and on upper tail-coverts, the streaks blacker and more conspicuous than in the adult. Beneath with an ochraceous tinge anteriorly, the streaks broader and deeper black than in the adult, though less sharply defined. The infra-maxillary streak expanded into a broad, blackish elongated blotch." (*Hist. N. Am. B.*)

The Savanna Sparrow is one of those inconspicuous little birds which hide in the grass or run stealthily along the fences or furrows, having nothing special in their appearance or habits to attract particular attention. It is a very abundant species, at suitable seasons, throughout the eastern portions of North America, breeding in the more northern states and northward, and wintering in the more southern portions of the Union. In portions of Illinois the species is, to a greater or less extent, a permanent resident. At least, the writer has in summer taken its nest and eggs, and in midwinter shot specimens of the bird itself, at Mount Carmel. It was, however, very rare there in summer, and, except in mild seasons, by no means common in winter, being chiefly observed as a spring and fall migrant.

The general habits of the Savanna Sparrow are very similar to those of the Vesper Sparrow,—like the latter, frequenting meadows and nesting on the ground.

Genus **POOCÆTES** Baird.

Poocætes Baird, Birds N. Am. 1858. 447. Type, *Fringilla graminea* Gmel.

"Gen. Char. Bill rather large; upper outline slightly decurved towards the end, lower straight; commissure slightly concave. Tarsus about equal to the middle toe; outer toe a little longer than the inner, its claw reaching to the concealed base of the middle claw; hind toe reaching to the middle of the middle claw. Wings usually long, reaching to the middle of the tail as far as the coverts, and pointed; the primaries considerably longer than the secondaries, which are not much surpassed by the tertiaries; second and third quills longest; first little shorter, about equal to the fourth, shorter than the tail; the outer tail-feathers scarcely shorter; the feathers rather stiff; each one acuminate and sharply pointed; the feathers broad nearly to the end, when they are obliquely truncate. Streaked with brown above everywhere; beneath, on the breast and sides. The lateral tail-feather is white. Shoulder chestnut-brown."

"The essential characters of the genus consist in the long and pointed wings longer than the tail and without long tertials; and the rather stiff forked tail, with its acute feathers." (*Hist. N. Am. B.*)

Poocætes gramineus (Gmel.)

VESPER SPARROW.

Popular synonyms. Bay-winged Bunting; Grass Finch.

Fringilla graminea GMEL. S. N. i, 1788, 922.—AUD. Orn. Biog. i, 1831, 473; v, 1839, 502, pl. 94.—NUTT. Man. i, 1832, 182, 482.

Emberiza graminea WILS. Am. Orn. iv, 1811, 51, pl. 31, fig. 5.—AUD. Synop. 1839, 102; B. Am. iii, 1841, 65, pl. 153.

Poocætes gramineus BAIRD, B. N. Am. 1858, 447; Cat. N. Am. B. 1859, No. 337.—COUES, Key, 1872, 136; Check List, 1873, No. 161; 2d ed. 1882, No. 232; B. N. W. 1874, 129 (*Poœcetes*). —B. B. & R. Hist. N. Am. B. i, 1874, 545.—RIDGW. Nom. N. Am. B. 1881, No. 197.

HAB. Eastern United States and British Provinces, north to the Saskatchewan, in the interior; breeding chiefly north of 38° and wintering chiefly south of the same latitude, within the United States. (Replaced in the Western Province by *P. gramineus confinis*, distinguished by paler colors with narrower streaks, more slender bill, etc.)

"SP. CHAR. Tail feathers rather acute. Above light yellowish brown; the feathers everywhere streaked abruptly with dark brown, even on the sides of the neck, which are paler. Beneath yellowish (sometimes reddish) white; on the jugulum and sides of neck and body streaked with brown. A faint light superciliary and maxillary stripe; the latter margined above and below with dark brown; the upper stripe continued around the ear-coverts, which are darker than the brown color elsewhere. Wings with the shoulder light chestnut-brown, and with two dull whitish bands along the ends of the coverts; the outer edge of the secondaries also is white. Exposed portion of outer tail-feather and edge and tip of the second, white. Length, about 6.25; wing, 3.10; tail, 2.50; bill, .33 from frontal feathers to point, by .33 in depth at base; tarsus, .72. Bill yellow, dusky above; legs yellow. (Measurements of No. 10,147, male, Washington, D. C.)"

This plainly colored bird is found throughout the State, in suitable localities, as a summer resident, and an occasional winter resident in the southern portion. Except in the more northern counties, however, it is abundant only during the migrations, the majority of them passing to the northward to breed. It inhabits during summer open grassy places, especially meadows, and but for its exceedingly sweet song would scarcely be noticed, so unobtrusive is it in its habits and appearance. The song of this species is thus described by Mr. John Burroughs, in his charming book called "Wake Robin":

"Have you heard the song of the Field-Sparrow?" he asks. "If you have lived in a pastoral country, with broad upland pastures, you could hardly have missed him. Wilson, I believe, calls him the Grass-Finch, and was evidently unacquainted with his powers of song. The two white lateral quills of his tail, and his habit of running and skulking a few yards in advance of you as you walk through the fields, are sufficient to identify him. Not in meadows or orchards, but in high, breezy pasture-grounds, will you look for

him. His song is most noticeable after sundown, when other birds are silent, for which reason he has been aptly called the Vesper Sparrow. The farmer following his team from the field at dusk catches his sweetest strain. His song is not so brisk and varied as that of the Song Sparrow, being softer and wilder, sweeter and more plaintive. Add the best parts of the lay of the latter to the sweet vibrating chant of the Wood Sparrow (*Spizella pusilla*), and you have the evening hymn of the Vesper-bird—the poet of the plain unadorned pastures. Go to those broad, smooth, up-lying fields, where the cattle and sheep are grazing, and sit down on one of the warm, clean stones, and listen to this song. On every side, near and remote, from out the short grass which the herds are cropping, the strain rises. Two or three long, silver notes of rest and peace, ending in some subdued trills or quavers, constitute each separate song. Often you will catch only one of the bars, the breeze having blown the minor part away. Such unambitious, unconscious melody! It is one of the most characteristic sounds in Nature. The grass, the stones, the stubble, the furrow, the quiet herds, and the warm twilight among the hills, are all subtilely expressed in this song; this is what they are at least capable of."

Genus **CHONDESTES** Swainson.

Chondestes Swainson, Phil. Mag. i, 1827, 435. Type, *Chondestes strigatus* Sw., = *Fringilla grammaca* Say.

"Gen. Char. Bill swollen; both outlines gently curved; the lower mandible as high as the upper; the commissure angulated at the base, and then slightly sinuated. Lower mandible rather narrower at the base than the length of the gonys; broader than the upper. Tarsi moderate, about equal to the middle toe; lateral toes equal and very short, reaching but little beyond the middle of the penultimate joint of the middle toe, and falling considerably short of the base of middle claw. Wings long, pointed, reaching nearly to the middle of the tail; the tertials not longer than the secondaries; the first quill shorter than the second and third, which are equal. The tail is moderately long, considerably graduated, the feathers rather narrow, and elliptically rounded at the end.

"Streaked on the back. Head with well defined large stripes. Beneath white, with a pectoral spot. Only one species recognized." (*Hist. N. Am. B.*)

Chondestes grammacus (Say).

LARK SPARROW.

Popular synonyms. Lark Finch; Potato Bird ("Farmers about Saint Louis"; Coale).

Fringilla grammaca Say, Long's Exp. i, 1823, 139.—Nutt. Man. i, 1832, 480.—Aud. Orn. Biog. v, 1839, 17, pl. 390.

Chondestes grammaca Bp. 1838.—Baird, B. N. Am. 1858, 456, (part); Cat. N. Am. B. 1859, No. 344, (part).—Coues, Key, 1872, 146, (part); Check List, 1873, No. 186 (part); 2d ed. 1882, No. 281 (part), ("*grammica*"); B. N. W. 1874, 159 (part).—B. B. & R. Hist. N. Am. B. i, 1874, 562, pl. 31, fig. 1.—Ridgw. Nom. N. Am. B. 1881, No. 204.

Emberiza grammaca Aud. Synop. 1839, 101; B. Am. iii, 1841, 63, pl. 158.

Hab. Mississippi Valley, north to Iowa, Wisconsin, and southern Michigan, east, regularly to Indiana, western Kentucky, etc., occasionally to Ohio, and casually to Massachusetts and the District of Columbia; west to eastern portion of the Great Plains; south to eastern Texas.

"Sp. Char. Hood chestnut, tinged with black towards the forehead, and with a median stripe and superciliary stripe of dirty whitish. Rest of upper parts pale grayish olive, the interscapular region alone streaked with dark brown. Beneath white, a round spot on the upper part of the breast, a broad maxillary stripe cutting off a white stripe above, and a short line from the bill to the eye, continued faintly behind it, black. A white crescent under the eye, bordered below by black and behind by chestnut, on the ear-coverts. Tail-feathers dark brown, the outermost edged externally and with more than terminal third white, with transverse outline; the white decreasing to the next to innermost, tipped broadly with white. Length, 6 inches; wing, 3.30." (*Hist. N. Am. B.*)

The colors of the female are slightly duller than in the male, the chestnut less bright, the black not so intense; the pattern, however, is the same.

The young bird has the breast and throat with a good many spots of dark brown instead of the single large one on the breast. The other markings are more indistinct.

This handsomely marked bunting (for it is not a true sparrow, nor a finch) is found abundantly in all suitable localities, its favorite resort being fertile prairies and meadows adjoining strips or groves of timber. In Illinois it evinces a special fondness for cornfields, in which it builds its nest at the foot of the stalks, while the male sings from the fence or the top of a small tree by the roadside.

It has been a matter of surprise to us that writers who have described the habits of western birds have not mentioned more particularly the vocal capabilities of this bird, which in sprightliness and continuity of song has few, if any, rivals among the North American *Fringillidæ*. Words entirely fail to describe its song, which, among the oak groves of California, as well as on the prairies of Illinois, is pre-eminent for the qualities above mentioned. As the bird perches upon the summit of a small tree, a fence post, or a telegraph wire, his notes may be heard throughout the day—in the morning before those of any other, and late in the evening when all else but this unweary songster are silent; indeed, often have we been awakened at midnight by a sudden outburst of silvery warblings from one of this species. This song is composed of a series of chants, each syllable rich, loud, and clear, interspersed

with emotional trills. At the beginning the song reminds one somewhat of that of the Indigo Bird (*Passerina cyanea*), but the notes are louder and more metallic, and their delivery more vigorous. Though seemingly hurried, it is one continued gush of sprightly music; now gay, now melodious, and then tender beyond description,—the very expression of emotion. At intervals the singer falters, as if exhausted by exertion, and his voice becomes scarcely audible; but suddenly reviving in his joy, it is resumed in all its vigor, until he appears to be really overcome by the effort.

The range of this species is probably pretty general within the State except in those districts over which forests still largely prevail. In Cook county, according to Mr. Nelson, (*Bull. Essex. Inst.* Vol. VIII., 1876, p. 107), it is "a common summer resident. Arrives the last of April or first of May, nesting the last of this month; departs August 25th to September 10th. Frequents barren fields and borders of prairies containing a sparse growth of small trees and rank weeds. Its nest is generally placed at the foot of some rank weed in a bare piece of ground. My observations regarding the song and general habits of the species, coincide with those of Mr. Ridgway as given in *North American Birds* (Vol. I., p. 561)."

The memoranda of Mr. H. K. Coale, relating to this species, which he has kindly allowed me to quote here, are as follows:

"This is a rather rare summer resident. About once a year I run across a stray pair on a burnt prairie or by the road. In July, 1883, saw one on a bare piece of land near woods, and watched him for half an hour or more; was quite unsuspicious and kept about the same place picking at the weed seeds. In St. Clair county I saw one pair; it is there called "potato bird"; people say that few survive the Paris green which they eat with the potato bugs."

Genus **ZONOTRICHIA** Swainson.

Zonotrichia Swains. Fauna Bor.-Am. ii, 1831, 493. Type, *Emberiza leucophrys* Forst.

"Gen. Char. Body rather stout. Bill conical, slightly notched, somewhat compressed, excavated inside; the lower mandible rather lower than the upper; gonys slightly convex; commissure nearly straight. Feet stout; tarsus rather longer than middle toe; the lateral toes very nearly equal. Hind toe longer than the lateral ones; the claws of the latter just reaching to base of middle one. Inner claw contained twice in its toe proper; claws all slender and considerably curved. Wings moderate, not reaching to the middle of the tail, but beyond the rump; secondaries and tertials equal and considerably less than longest primaries; second and third quills longest, first about equal to the fifth, much longer than tertials. Tail rather long, moderately rounded; the feathers not very broad.

"Back streaked. Rump and under parts immaculate, except in young. Head black, or with white streaks, entirely different from the back.

"This genus embraces some of the most beautiful of American Sparrows, all of the largest size in their subfamily.

"All the species properly belonging to this genus are North American; several South American species have, however, been assigned to it; but they are none of them strictly congeneric with those given below." (*Hist. N. Am. B.*)

Several Neotropical *Fringillidæ* have been referred to *Zonotrichia*, but none of them are strictly congeneric with the North American species, which together constitute a very distinctly circumscribed group. *Z. quinquestriata* Scl. & Salv. and *Z. mystacalis* Hartl. are apparently referable to *Amphispiza* Coues, of which the *Emberiza bilineata* Cassin is typical, though they may possibly constitute a generic or subgeneric group by themselves; while *Z. pileata* (Bodd.), a species distributed extensively over Central and South America, comes nearer the genus *Pyrgisoma*.

This species of *Zonotrichia* (as properly restricted) may be distinguished as follows:

A. No yellow supraloral spot, and throat not abruptly white.

a. Crown black, without lighter median stripe, but sometimes squamated with pale or dull whitish.

1. **Z. querula.** *Adult:* Crown, lores, chin, and throat, uniform deep black; beneath pure white, the sides striped with black; sides of head gray; back light grayish brown, streaked with brownish black. *Young, first winter:* Crown black, the feathers bordered with pale grayish brown, producing a scaled appearance; throat white, bordered on each side with a dusky streak; a blackish patch, or cluster of spots, on the jugulum; sides of head and neck buffy.

b. Crown black or brown, divided by a white, buff or yellowish stripe.

§ Median stripe of crown white (in adult) or buff (in young).

2. **Z. leucophrys.** Lores black or brown. *Adult:* Head-stripes black (one on each side of crown and one behind the eye) and white (one on middle of crown and one over the ear-coverts). Back light ash-gray, streaked with chestnut-brown; edge of wing white, breast clear light ash-gray. *Young, first winter:* Head-stripes chestnut-brown and dull buff; otherwise similar to adult. *Young, first plumage:* Crown dusky blackish on sides, the middle whitish streaked with dusky; throat and breast more or less streaked with dusky.

3. **Z. gambeli.*** Pattern of coloration exactly as in *leucophrys*, except that the lores are grayish white, or (in young) grayish buff, confluent with the light superciliary stripe. Median stripe of crown grayish white, much narrower than lateral black stripes; back olive-brownish, streaked with brownish black; edge of wing yellowish; whole throat, foreneck, etc., dingy gray.

4. **Z. intermedia.** Similar to *Z. gambeli*, but median stripe of crown pure white, wide as or wider than black lateral stripes; back ashy, streaked with chesnut-brown; edge of wing white; throat, etc., pale ashy. (Colors exactly as in *leucophrys*, except as to the lores, which are grayish white instead of black.)

*Confined to the Pacific Coast.

§§ Forehead and fore part of crown yellow centrally.

5. **Z. coronata.** Middle of crown, anteriorly, bright greenish yellow (in adult) or olive-yellow (in young). *Adult:* Pileum black laterally, the median portion yellow anteriorly, and ash-gray posteriorly. Plumage otherwise exactly as in *Z. gambeli*. *Young, in first winter:* No distinct stripes on crown, which is dull olive-yellowish, obscured by grayish brown, and streaked with dusky; the streaks more distinct posteriorly, and sometimes forming an ill-defined stripe on the side; otherwise, like the adult.

B. A yellow supraloral spot; throat abruptly white.

6. **Z. albicollis.** *Adult:* Two broad stripes on the crown, and a narrow one behind the eye, black; a white stripe in middle of crown, and one over ear-coverts, the latter becoming bright yellow over lores; ear-coverts and jugulum deep ash; back rusty brown, streaked with black. *Young, first winter:* Similar to adult, but head-stripes rusty dusky-brown and pale rusty buff, the yellow over the lores, and the white throat-patch, less distinct. *Young, first plumage:* Crown uniform snuff-brown, with a narrow whitish middle stripe; superciliary stripe dirty whitish, with no yellow over lores; jugulum streaked with dusky. Throat not abruptly white.

Zonotrichia querula (Nutt.)

HARRIS'S SPARROW.

Popular synonym. Mourning Finch.

Fringilla querula NUTT. Man. 2d ed. i, 1840. 558.

Zonotrichia querula GAMB. 1847.—BAIRD, B. N. Am. 1858, 462; Cat. N. Am. B. 1859, No. 348. —COUES, Key, 1872, 145; Check List 1873, No. 185; 2d ed. 1882, No. 280; B. N. W. 1874, 157.—B. B. & R. Hist. N. Am. B. i, 1874, 577, pl. 26, figs. 4, 7.—RIDGW. Nom. N. Am. B. 1881. No. 205.

Fringilla harrisii AUD. B. AM. vii, 1843, 331, 484.

Fringilla comata MAX. Reise Nord-Am. ii, 1841, 352.

HAB. Eastern border of the Great Plains, from northern Minnesota and Dakota (in summer) to central and eastern Texas (in winter). East, irregularly (?) to Wisconsin, Illinois, Iowa, and Missouri.

"SP. CHAR. Hood and nape, sides of head anterior to and including the eyes, chin, throat, and a few spots in the middle of the upper part of the breast and on its sides, black. Sides of head and neck ash-gray, with the trace of a narrow crescent back of the ear-coverts. Interscapular region of back, with the feathers reddish brown, streaked with dark brown. Breast and belly clear white. Sides of body light brownish, streaked. Two narrow white bands across the greater and middle coverts. Length about 7 inches; wing, 3.40; tail, 3.65.

"The bill of this species appears to be yellowish red. More immature specimens vary in having the black of the head more restricted, the nape and sides of the head to the bill pale reddish brown, lighter on the latter region. Others have the feathers of the anterior portion of the hood edged with whitish. In all there is generally a trace of black anterior to the eye." (*Hist. N. Am. B.*)

Considering the length of time it has been known (more than 40 years), comparatively little has been learned regarding the habits of this

species. Its nest and eggs are to this date (June, 1886) unknown, as is also its exact range during the breeding season.

The only specimens of this species known to the writer as having been taken in Illinois were those recorded in the "Nuttall Bulletin" for January, 1880, pp. 30, 31, one of which was obtained at Bloomington, in the spring of 1877, the other at Normal, on the 14th of November, 1879, both by Mr. W. H. Garman. Several examples have been taken in southern Wisconsin, near the Illinois line, one of which, shot at Racine, by Dr. Hoy, was mentioned by Mr. Nelson in his list, while three others, reported to me by Mr. H. K. Coale, were collected at LaCrosse, October 3, 1883.

Zonotrichia leucophrys (Forst.)

WHITE-CROWNED SPARROW.

Emberiza leucophrys Forst. Philos. Trans. lxii, 1772, 382, 403, 426.—Wils. Am. Orn. iv, 1811, 49, pl. 31, fig. 4.

Fringilla leucophrys Bp. 1828.—Nutt. Man. i, 1832, 479.—Aud. Orn. Biog. ii, 1834, 88; v, 1839, 515, pl. 144; Synop. 1839, 121; B. Am. iii, 1841, 157, pl. 192.

Fringilla (Zonotrichia) leucophrys Sw. & Rich. F. B.-A. ii, 1831, 255.

Zonotrichia leucophrys Bp. 1838.—Baird, B. N. Am. 1858, 458; Cat. N. Am. B. 1859, No. 345.—Coues, Key, 1872, 144; Check List, 1873, No. 183; 2d ed. 1882, No. 276; B. N. W. 1874, 154.—B. B. & R. Hist. N. Am. B. i, 1874, 566, pl. 25, figs. 9, 10.—Ridgw. Nom. N. Am. B. 1881, No. 206.

Hab. Breeding from northern Labrador to the Rocky Mountains, and south to at least latitude 48° on the Sierra Nevada in California and the higher ranges of Colorado. In winter, most of the eastern United States, wintering chiefly south of 38°; also, portions of Mexico, including Cape St. Lucas.

"Sp. Char. Head, above, upper half of loral region from the bill, and a narrow line through and behind the eye to the occiput, black; a longitudinal patch in the middle of the crown, and a short line from above the anterior corner of the eye, the two confluent on the occiput, white. Sides of the head, forepart of breast, and lower neck all round, pale ash, lightest beneath, and shading insensibly into the whitish of the belly and chin; sides of the belly and under tail-coverts tinged with yellowish brown. Interscapular region streaked broadly with dark chestnut-brownish. Edges of the tertiaries brownish chestnut. Two white bands on the wing.

Female. Similar but smaller; immature birds in first winter, with the black and white stripes on the crown replaced by dark chestnut-brown and brownish yellow. Length, 7.10 inches; wing, 3.25. *Young of the year* thickly streaked with dusky on the breast. The lateral stripes of the crown dull brown, the median one streaked whitish."

"The white of the crown separates two black stripes on either side, rather narrower than itself. The black line behind the eye is continued anterior to it into the black at the base of the bill. The lower eyelid is white. There are some obscure cloudings of darker

on the neck above. The rump is immaculate. No white on the tail except very obscure tips. The white on the wings crosses the ends of the middle and greater coverts." (*Hist. N. Am. B.*)

This fine sparrow is usually an abundant migrant in the northern portions of the State, and a more or less common winter resident in the southern parts. At Mount Carmel it was often abundant throughout the winter, frequenting, during the coldest weather, the door-yards and gardens, in company with Snowbirds (*Junco hyemalis*), Tree Sparrows, White-throated Sparrows, Yellow-rump Warblers, and other familiar species. Its clear, but rather subdued, whistling song was often heard just before its departure for the north. This song much resembles that of the White-throated Sparrow, but is less monotonous and rather more plaintive.

"Among the birds that tarry briefly with us in the spring on their way to Canada and beyond," writes Mr. John Burroughs, in *Scribner's*, "there is none that I behold with so much pleasure as the White-crowned Sparrow. I have an eye out for him all through April and the first week in May. He is the rarest and most beautiful of the Sparrow kind. He is crowned as some hero or victor in the games. He is usually in company with his congener, the White-throated Sparrow, but seldom more than in the proportion of one to twenty of the latter. Contrasted with this bird, he looks like its more fortunate brother, upon whom some special distinction has been conferred, and who is, from the egg, of finer make and quality. His sparrow color, of ashen gray and brown, is very clear and bright, and his form graceful. His whole expression, however, culminates in a regular manner in his crown. The various tints of the bird are brought to a focus here and intensified, the lighter ones becoming white and the deeper ones nearly black. There is the suggestion of a crest also, from a habit this bird has of slightly elevating this part of its plumage, as if to make more conspicuous its pretty markings. They are great scratchers, and will often remain several minutes scratching in one place like a hen. Yet, unlike the hen and like all hoppers, they scratch with both feet at once, which is by no means the best way to scratch."

Zonotrichia albicollis (Gmel.)

WHITE-THROATED SPARROW.

Popular synonyms. Peabody Bird (New England); Yellow-browed Sparrow.

Fringilla albicollis GMEL. S. N. i, 1788, 926.—WILS. Am. Orn. iii, 1811, 51, pl. 22, fig. 2.
Zonotrichia albicollis SW. 1837.—BAIRD, B. N. Am. 1858, 463; Cat. N. Am. B. 1859, No. 349.—COUES, Key, 1872, 144, fig. 88; Check List, 1873, No. 182, 2d ed. 1882, No. 275; B. N. W. 1874, 151.—B. B. & R. Hist. N. Am. B. i, 1874, 574, pl. 26, fig. 10.—RIDGW. Nom. N. Am. B. 1881, No. 209.
Fringilla pennsylvanica LATH. Ind. Orn. 1790, 446.—AUD. Orn. Biog. i, 1831, 42, pl. 8; Synop. 1839, 121; B. Am. iii, 1841, 153, pl. 191.

HAB. Eastern North America, breeding from northern United States north to the "Fur Countries." Winters in the United States, chiefly south of 40°, and west to the borders of the Great Plains; accidental west to Utah and Oregon; also, in England.

"SP. CHAR. Two black stripes on the crown, separated by a median one of white. A broad superciliary stripe from the base of the mandible to the occiput, yellow as far as the middle of the eye, and white behind this. A broad black streak on the side of the head from behind the eye. Chin white, abruptly defined against the dark ash of the sides of the head and upper part of the breast, fading into white on the belly, and margined by a narrow black maxillary line. Edge of wing and axillaries yellow. Back and edges of secondaries rufous brown, the former streaked with dark brown. Two narrow white bands across the wing-coverts. Length, 7 inches; wing, 3.10; tail, 3.20. Young of the year not in the collection." (*Hist. N. Am. B.*)

Few birds, if any, are more abundant or more generally distributed than is the present species, during the winter, throughout the more eastern United States. From the eastern border of the Great Plains to the Atlantic coast it is decidedly the most numerous of the Fringillidæ,—every hedge-row, brier-patch, brush-pile or similar place being frequented by dozens or scores of individuals. During the day these occupy themselves silently in gleaning for food among the dead leaves, but at the approach of dusk congregate more closely together, and before seeking their "roost," in the thicker growths of a swamp, in brush-piles, etc., become quite noisy, calling to one another with a sharp, penetrating, almost metallic chirp, which is peculiarly in accord with a cold, drear winter evening. In the spring, before their departure for the north, the males occasionally whistle their monotonous but exceeding clear and plaintive chant, sounding like *pe-pe-pe'body, pe'body, pe'body,*—on which account the species has in parts of New England received the name of "Peabody Bird."

GENUS **SPIZELLA** BONAPARTE.

Spizella BONAP. Geog. and Comp. List, 1838, 33. Type, *Fringilla canadensis* LATH., =*F. monticola* GMEL.

"GEN. CHAR. Bill conical, the outlines slightly curved; the lower mandible decidedly larger than the upper; the commissure gently sinuated; the roof of the mouth not

knobbed. Feet slender; tarsus rather longer than the middle toe; the hinder toe a little longer than the outer lateral, which slightly exceeds the inner; the outer claw reaching the base of the middle one, and half as long as its toe. Claws moderately curved. Tertiaries and secondaries nearly equal; wing somewhat pointed, reaching not quite to the middle of the tail. First quill a little shorter than the second and equal to the fifth; third longest. Tail rather long, moderately forked, and divaricated at the tip; the feathers rather narrow. Back streaked; rump and beneath immaculate. Young streaked beneath.

"This genus differs from *Zonotrichia* principally in the smaller size, and longer and forked instead of rounded tail.

"Birds of the year of this genus are very difficult to distinguish, even by size, except in *monticola*. The more immature birds are also very closely related. In these the entire absence of streaks on a plumbeous head point to *atrigularis;* the same character in a reddish cap, and a reddish upper mandible, to *pusilla;* a dusky loral spot, with dark streaks, and generally a rufous shade on top of head, to *socialis*. *S. breweri*, with a streaked head, lacks the dusky lore and chestnut shade of feathers. *S. pallida* generally has a median light stripe in the cap, and a dusky mandibular line." (*Hist. N. Am. B.*)

With a single exception, all the known species of this genus are North American, though one of them (*S. atrigularis*) barely comes within our borders in Arizona and southern California. The single purely extralimital species is *S. pinetorum* Salvin, of the Guatemalan highlands. It is closely related to *S. socialis*, but is evidently distinct.

Leaving out *S. atrigularis* and *S. wortheni*,* the species inhabiting the United States may be characterized as follows:

Common Characters. Back brownish, sharply streaked with black; rump plain grayish; wings with two light bands; lower parts unstreaked, except in young.

A. Crown rufous in adults.

a. Maxilla black, the mandible yellow; a dusky spot on the jugulum.

1. **S. monticola.** *Adult:* Crown and outer webs of scapulars and tertials, bright rufous; two distinct white bands on the wing; sides of head and neck ash-gray, lighter on throat; a pale gray superciliary stripe, whitish anteriorly; a rufous postocular stripe; a dusky spot in middle of the jugulum.

b. Bill wholly black or reddish brown.

2. **S. pusilla.** Bill wholly light reddish brown. Crown dull rufous; back dull rufous, the feathers edged with grayish and streaked centrally with black; outer edges of tertials pale grayish brown; sides of head pale ash-gray, with a dull rufous streak behind the eye; wing with two indistinct bands. *Young:* Crown and back dull grayish brown, without rufous; breast narrowly and indistinctly streaked with dusky.

3. **S. socialis.** Bill wholly black in adults; dull reddish brown in young. Crown bright rufous, becoming black anteriorly; a whitish superciliary stripe; a blackish streak behind the eye; ear-coverts, sides of neck and rump, ash-gray. *Young:* Crown and back brown, broadly streaked with black; breast and sides thickly streaked with dusky.

* *Spizella wortheni* Ridgw. Proc. U. S. Nat. Mus. vii, Aug. 22, 1884, 259. Silver City, New Mexico. (Dedicated to Mr. Chas. K. Worthen, of Warsaw, Illinois.)

B Crown grayish brown, streaked with black, at all ages.

4. **S. pallida.** *Adult:* Crown streaked black and brown, divided by a distinct stripe of light brownish gray; nape ash-gray; ear-coverts light brownish, edged above and below by a dusky streak; distinct maxillary and superciliary stripes of brownish white, the former bordered underneath by a dusky bridle; beneath continuous white, the breast and sides faintly shaded with grayish brown. *Young:* Head more tinged with fulvous, and the markings less distinct; breast streaked with dusky.

5. **S. breweri.** *Adult:* Crown pale grayish brown, streaked with black, and without middle stripe; nape and back similar; no distinct superciliary or maxillary stripe, and ear-coverts but slightly darker than adjoining portions. *Young:* Similar, but breast streaked with dusky.

Spizella monticola (Gmel.)

TREE SPARROW.

Popular synonyms. Canadian Sparrow; Winter Chippy.

Fringilla monticola GMEL. S. N. i, 1788, 912.

Spizella monticola BAIRD, B. N. Am. 1858, 472; Cat. N. Am. B. 1859, No. 357.—COUES, Key, 1872, 142; Check List, 1873, No. 177; 2d ed. 1882, No. 268; B. N. W. 1874, 146.—B. B. & R. Hist. N. Am. B. ii, 1874, 3, pl. 27, fig. 5.

Fringilla canadensis LATH. Ind. Orn. i, 1790, 434.—NUTT. Man. i, 1832, 495.—AUD. Orn. Biog. ii, 1834, 511; v, 1839, 504, pl. 188.

Emberiza canadensis SW. & RICH. 1831.—AUD. Synop. 1839, 105; B. Am. iii, 1841, 83, pl. 166.

Fringilla arborea WILS. Am. Orn. ii, 1810, 12, pl. 16, fig. 3.

Spizella montana "(FORST.)" RIDGW. Nom. N. Am. B. 1881, No. 210.

HAB. Eastern North America, breeding (so far as known) wholly north of the United States (Labrador, Hudson's Bay Terr., and thence nearly or quite to the Arctic coast), wintering chiefly within the United States. (In western North America represented by the paler colored *S. monticola ochracea* BREWSTER, which breeds in Alaska, and migrates in winter to the Western States and Territories.)

SP. CHAR. Mandible yellow, maxilla black. Pileum rich rufous, also a distinct postocular stripe; sides of head light ash-gray, including a broad superciliary stripe, the latter nearly white anteriorly. Nape mixed ashy and rufous. Back rusty ochraceous, streaked with rufous and black. Wings rusty, the feathers blackish centrally; both rows of wing-coverts broadly tipped with pure white, forming two distinct bands; tertials bordered with white toward ends. Rump uniform grayish olive. Tail dark grayish brown, feathers edged with paler. Lower parts whitish, tinted with ashy anteriorly, sides and flanks tinged with ochraceous, sides of breast tinged with rufous, and middle of jugulum with a dusky spot. Total length, 6.25–6.50 inches; extent, 9.25–9.50; wing, about 2.80–3.10; tail, 2.80–3.00.

This pretty little sparrow is one of our most common and familiar winter residents, occurring everywhere throughout the State, and in the sheltered bushy swamps in the more southern counties congregating in immense numbers. It comes familiarly about the dooryards and gardens, gleaning from the snow in company with Snowbirds (*Junco hyemalis*) and other winter residents. During the warmer days of winter, or even if the weather be cold though clear, the rich medley of soft jingling notes uttered by a number of

individuals of this species is not excelled for sweetness by any bird notes, while during the love season, says Dr. Brewer, "the Tree Sparrow is quite a fine musician, its song resembling that of the Canary, but finer, sweeter, and not so loud." According to Mr. Brewster, "their song is a loud, clear and powerful chant, starting with two high notes, then falling rapidly, and ending with a low, sweet warble." After mentioning the fact that this species is, in northeastern Illinois, an "abundant winter resident about thickets and in marshes," and that it "arrives the 15th of October and departs the 1st of April," Mr. Nelson, in his list (p. 108) thus appropriately describes their song:

"The first of March they collect in large flocks and are very musical. Often a large portion of the flock will unite in song which, although it may be more than equaled later in the season, yet, coming as it does between winter and spring, and so touchingly plaintive, one involuntarily stops to listen with a peculiar feeling of pleasure."

Spizella socialis (Wils.)

CHIPPING SPARROW.

Popular synonyms. Chippy; Chip-bird; Hair-bird.

Fringilla socialis WILS. Am. Orn. ii, 1810, 127, pl. 16, fig. 5.—NUTT. Man. i, 1832, 497.—AUD. Orn. Biog. ii, 1834, 21; v, 1839, 517, pl. 104.

Emberiza socialis AUD. Synop. 1839, 105; B. Am. iii, 1841, 80, pl. 165.

Spizella socialis BP. 1838.—BAIRD, B. N. Am. 1858, 473; Cat. N. Am. B. 1859, No. 359.—COUES, Key, 1872, 142; Check List, 1873, No. 178; B. N. W. 1874, 148.—B. B. & R. Hist. N. Am. B. ii, 1874, 7, pl. 27, fig. 1.

Spizella domestica "(BARTR.)" COUES, Proc. Phil. Ac. 2d Check List, 1882, No. 269.—RIDGW. Nom. N. Am. B. 1881, No. 211.

HAB. Eastern North America, north to the "Fur Countries," wintering in Southern States, Cuba, and eastern Mexico. In the western United States and the greater part of Mexico, replaced by the slightly but constantly different *S. socialis arizonæ*.

"SP. CHAR. Rump, back of neck, and sides of head and neck, ashy. Interscapular region with black streaks, margined with pale rufous. Crown continuous and uniform chestnut. Forehead black, separated in the middle by white. A white streak over the eye to nape, and a black one from the base of the bill through and behind the eye. Lores dusky. Upper parts unspotted whitish, tinged with ashy on the sides and across the upper breast. Tail-feathers and primaries edged with paler, not white. Two narrow white bands across the wing-coverts. Bill black. Length, 5.75; wing, nearly 3.00; tail, 2.50 (or less).

"*Young*. Immature birds and frequently the adult females with the cap streaked with blackish lines, the chestnut sometimes nearly or quite wanting. Birds of the year streaked beneath and on rump.

"The color of bill varies; sometimes entirely black throughout, sometimes very light (but never reddish as in *S. pusilla*), with all intermediate stages. There is usually, however, a dusky tinge in the upper bill, wanting in *pusilla*, and the lores are almost always more or less dusky in all stages of plumage." (*Hist. N. Am. B.*)

So well known is the common Chipping Sparrow, Chip-bird, or Chippy, that a particular account of its habits is hardly necessary here. Perhaps the most familiar and confiding of all our birds, it is at the same time one of the most beneficial; and, so far as we are aware, possesses not a single objectionable trait. Says Dr. Brewer (*Hist. N. Am. B.*, Vol. II., pp. 9, 10):

"The tameness and sociability of this bird surpass that of any of the birds I have ever met with in New England, and are only equaled by similar traits manifested by the Snowbird (*J. hyemalis*) in Pictou. Those that live about our dwellings in rural situations, and have been treated kindly, visit our doorsteps, and even enter the houses, with the greatest familiarity and trust. They will learn to distinguish their friends, alight at their feet, call for their accustomed food, and pick it up when thrown to them, without the slightest signs of fear. One pair which, summer after summer, had built their nest in a fir-tree near my door, became so accustomed to be fed that they would clamor for their food if they were any morning forgotten. One of these birds, the female, from coming down to the ground to be fed with crumbs, soon learned to take them on the flat branch of the fir near her nest, and at last to feed from my hand, and afterwards from that of other members of the family. Her mate, all the while, was comparatively shy and distrustful, and could not be induced to receive his food from us, or to eat in our presence."

Spizella pallida (Swains.)

CLAY-COLORED SPARROW.

Emberiza pallida Swains. F. B.-A. ii, 1831, 251.

Spizella pallida Bp. 1838.—Baird, B. N. Am. 1858, 474; Cat. N. Am. B. 1859, No. 360.—Coues, Key, 1872, 143; Check List, 1873, No. 180; 2d ed. 1882, No. 272; B. N. W. 1874, 148.—B. B. & R. Hist. N. Am. B. ii, 1874, 11, pl. 27, fig. 3.—Ridgw. Nom. N. Am. B. 1881, No. 212.

Emberiza shattuckii Aud. B. Am. vii, 1843, 347, pl. 493.

Hab. Great Plains, from the Saskatchewan to Texas, and (in winter) along the southern border to Arizona and Cape St. Lucas, west to base of Rocky Mountains, east to prairies of Iowa, Wisconsin, and Illinois. (Note. The "*Emberiza pallida*" of Audubon's works is not this species, but *S. breweri*, Cass., which replaces *S. pallida* from the Rocky Mountains to the Pacific coast. The two species are closely allied, but quite distinct.)

"Sp. Char. Smaller than *S. socialis*. Back and sides of hind neck ashy. Prevailing color above pale brownish yellow, with a tinge of grayish. The feathers of back and crown streaked conspicuously with blackish. Crown with a median pale ashy and a lateral or superciliary ashy white stripe. Beneath whitish, tinged with brown on the

breast and sides, and an indistinct narrow brown streak on the edge of the chin, cutting off a light stripe above it. Ear-coverts brownish yellow, margined above and below by dark brown, making three dark stripes on the face. Bill reddish, dusky towards tip. Legs yellow. Length, 4.75; wing, 2.55.

"The ashy collar is quite conspicuous, and streaked above with brown. The rump is immaculate. The streaks on the feathers of the crown almost form continuous lines, about six in number. The brown line above the ear-coverts is a postocular one. That on the side of the chin forms the lower border of a white maxillary stripe which widens and curves around behind the ear-coverts, fading into the ashy of the neck. The wing feathers are all margined with paler, and there is an indication of two light bands across the ends of the coverts.

"The young of this species is thickly streaked beneath, over the throat, breast, and belly, with brown, giving to it an entirely different appearance from the adult. The streaks in the upper parts, too, are darker and more conspicuous. The margins of the feathers are rather more rusty.

"This species is readily distinguishable from the other American *Spizellas*, except *S. breweri* (which see), in the dark streaks and median ashy stripe on the crown, the paler tints, the dark line on the side of the chin, etc." (*Hist. N. Am. B.*)

The Clay-colored Sparrow is one of that group of species to which we have previously alluded (see page 246) as characterizing a Campestrian Province. Its range is closely coincident with that of Sprague's Pipit (*Anthus spragueii*), Baird's and Leconte's Sparrows, Harris's Finch, McCown's and Chestnut-collared Longspurs, and Lark Bunting,—being the Great Plains, in their whole extent, from the Valley of the Saskatchewan southwards, and to the eastward extending sparingly into the prairie districts along the eastern side of the Mississippi river. In Illinois, the present species is known with certainty to occur only in the more northern portions of the State, although it no doubt inhabits the prairie districts well southward, especially in the more western counties. Mr. Nelson records it as "a rare summer resident about the borders of prairies," in Cook county, and adds that "specimens are in Mr. Holden's collection taken near Chicago."

In its habits this species is said to closely resemble the Chipping Sparrow, especially in its confiding familiarity, and its song is said to be very similar to that of *S. socialis*. The nest and eggs of the two species are hardly distinguishable.

Spizella pusilla (Wils.)

FIELD SPARROW.

Popular synonyms. Field Chippy, or Chip-bird; Red-billed Chippy.

Motacilla juncorum GMEL. S. N. i, 1788, 952 (based on *Little Brown Sparrow* of CATESBY).
Fringilla juncorum NUTT. Man. i, 1832, 499; ed. 1840, i, 577.
Fringilla pusilla WILS. Am. Orn. ii, 1810, 121, pl. 16, fig. 2.—AUD. Orn. Biog. ii, 1834, 229, pl. 139.
Emberiza pusilla AUD. Synop. 1839, 104; B. Am. iii, 1841, 77, pl. 164.
Spizella pusilla BP. 1838.—BAIRD, B. N. Am. 1858, 473; Cat. N. Am. B. 1859, No. 358.—COUES, Key, 1872, 143; Check List, 1873, No. 179; B. N. W. 1874, 148.—B. B. & R. Hist. N. Am. B. ii, 1874, 5, pl. 27, fig. 2.—RIDGW. Nom. N. Am. B. 1881, No. 214.
Spizella agrestis "(BARTR.)" COUES, 2d Check List, 1872, No. 271.

HAB. Eastern United States, breeding throughout (except in Gulf States?) and wintering chiefly south of 38°.

SP. CHAR. Bill brownish red. Crown continuous rufous, with a faint indication of an ashy central stripe, and ashy nuchal collar. Back somewhat similar, with shaft-streaks of blackish. Sides of head and neck (including a superciliary stripe) ashy. Ear-coverts rufous. Beneath white, tinged with yellowish anteriorly, the sides of the breast with a rufous patch. Tail-feathers and quills faintly edged with white. Two whitish bands across the wing-coverts. Autumnal specimens more rufous. Length about 5.75; wing, 2.34.

"This species is about the size of *S. socialis*, but is more rufous above; lacks the black forehead and eye stripe; has chestnut ears, instead of ash; has the bill red, instead of black; lacks the clear ash of the rump; has a longer tail, etc. It is more like *monticola*, but is much smaller; lacks the spot on the breast, and the predominance of white on the wings, etc. The young have the breast and sides streaked, and the crown slightly so." (*Hist. N. Am. B.*)

Although equally common with the Chipping Sparrow, and in many localities even more abundant, the little Field Sparrow is far less known on account of its more secluded habits. Instead of seeking the society of man it almost wholly avoids the towns and seems inseparably attached to the rural districts. It is by no means timid or retiring, however, but prefers the country because only there can it find those localities which are essential to its presence.

The Field Sparrow inhabits all sorts of bushy localities, such as hazel and blackberry thickets, old fields grown up to weeds and sprouts, the borders of prairies, etc. Its nest is built either on the ground or not higher than two or three feet above it, and the eggs are very different in color from those of the Chipping Sparrow, being greenish or bluish white, thickly speckled with reddish brown. Frequently the nest is built in gooseberry or currant bushes in a farm-house garden, but oftener a more secluded spot is chosen.

While conceding that this species is "a very varied and fine singer," Dr. Brewer (*Hist. N. Am. B.* Vol. II., p. 6) says "its notes are not very powerful, and cannot be heard any distance." This has not been the writer's experience, however, his observations leading him to quite the contrary opinion. In Illinois, Indiana, Maryland, and Virginia, where he has listened to its song on countless occasions, he has always regarded the song of the Field Sparrow as being particularly characterized by its power, being certainly far louder and capable of being heard at a much greater distance, than that of the Song Sparrow (*Melospiza fasciata*) or Vesper Sparrow (*Poocætes gramineus*) or any others of the smaller species of this family. The Field Sparrow's song is further characterized by its plaintiveness, and were it not for this quality would rank among the very finest bird songs which can be heard in our fields. Sometimes a particularly gifted male will repeat twice or three times the usual song, without faltering between, and then the performance becomes truly fine.

Genus **JUNCO** Wagler.

Junco Wagler, Isis, 1831, 526. Type, *Fringilla cinerea* Sw.

Gen. Char. Bill small, conical; culmen curved at the tip; the lower jaw quite as high as the upper. Tarsus longer than the middle toe; outer toe longer than the inner, barely reaching as far as the middle of the latter; extended toes reaching about to the middle of the tail. Wings rather short; reaching over the basal fourth of the exposed surface of the tail; primaries, however, considerably longer than the secondaries and tertials, which are nearly equal. The second quill longest, the third to fifth successively but little shorter; first longer than sixth, much exceeding secondaries. Tail moderate, a little shorter than the wings; slightly emarginate and rounded. Feathers rather narrow; oval at the end. No streaks on the head or body; color above uniform on the head, back, or rump, separately or on all together. Belly white; outer tail-feathers white. Young birds streaked above and below.

"The essential characters of this genus are the middle toe rather shorter than the short tarsus; the lateral toes slightly unequal, the outer reaching the base of the middle claw; the tail a little shorter than the wings, slightly emarginate. In *Junco cinereus* the claws are longer; the lower mandible a little lower than the upper." (*Hist. N. Am. B.*)

The genus is numerously represented in the western portions of the continent, where no less than nine species occur (one of them, *J. hyemalis*, as a straggler, and two—*J. insularis*, of Guadalupe I., and *J. bairdi*, of Lower California—not coming within the United

States). In Eastern North America only two species occur, and one of these (*J. oregonus*) merely as a straggler. Both belong to the Illinois fauna, and may be distinguished as follows:

1. **J. hyemalis.** Plain blackish gray, or slate-gray the belly and lateral tail-feathers white. (Abundant winter resident.)
2. **J. oregonus.** Head, neck, and jugulum, black; back brownish; rump, only, slate-gray; sides light pinkish brown; belly and lateral tail-feathers white, as in *J. hyemalis*.

Of the western species, *J. aikeni* is larger than *J. hyemalis*, and usually has distinct white wing-bands; the sides ash-gray, and the bill light pinkish. *J. annectens* has the head, neck, jugulum, and upper parts ash-gray (back more brownish), the sides pinkish; bill light pinkish. *J. caniceps* resembles *J. annectens*, but has the back bright rufous and the sides ashy, like the breast. *J. dorsalis* resembles *J. caniceps*, but has the upper mandible black, the lower yellow, and the lower parts grayish white. *J. cinereus* is allied to *dorsalis*, and like that species has the iris bright yellow (in other species, excepting *J. dorsalis*, the eye is dark brown or claret color), but has the rufous of the back extended over the wing-coverts and tertials. Each species, or race, has likewise distinctive proportions and a separate breeding range.

Junco hyemalis (Linn.)

SLATE-COLORED JUNCO.

Popular synonyms. Black Snowbird; Common Snowbird; Slate-colored Snowbird; Gray Snowbird; Eastern Snowbird.

Fringilla hyemalis Linn. S. N. ed. 10, i, 1758, 183.—Aud. Orn. Biog. i, 1831, 72; v, 505, pl. 13.
Niphœa hyemalis Aud. Synop. 1839, 106; B. Am. iii, 1841, 88, pl 167.
Junco hyemalis Scl. 1857.—Baird, B. N. Am. 1858, 468; Cat. N. Am. B. 1859, No. 354.—Coues, Key, 1872, 141; Check List, 1873, No. 174; 2d ed. 1882, No. 261 ("*hiemalis*"); B. N. W. 1874, 141.—B. B. & R. Hist. N. Am. B. i, 1874, 580, pl. 26, fig. 5.—Ridgw. Nom. N. Am. B. 1881, No. 217.
Fringilla hudsonia Forst. Philos. Trans. lxii, 1772, 428.—Wils. Index, vi, 1812, p xiii.
Fringilla nivalis Wils. Am. Orn. iii, 1810, 129, pl. 16, fig. 6.—Nutt. Man. i, 1832, 491.

Hab. Northern North America, breeding from northern New England to Alaska (Yukon district); in winter, whole of eastern United States, and straggling westward (Colorado, Utah, Arizona, etc.).

"Sp. Char. Everywhere of a grayish or dark ashy black, deepest anteriorly; the middle of the breast behind and of the belly, the under tail-coverts, and first and second external tail-feathers, white; the third tail-feather white, margined with black. Length, 6.25; wing, about 3.00. In winter washed with brownish. Young streaked above and below.

"The wing is rounded; the second quill longest; the third, fourth, and fifth, successively, a little shorter; the first longer than the sixth. Tail slightly rounded, and a little emarginate. In the full

spring dress there is no trace of any second color on the back, except an exceedingly faint and scarcely appreciable wash of dull brownish over the whole upper parts. The markings of the third tail-feather vary somewhat in specimens. Sometimes the whole tip is margined with brown; sometimes the white extends to the end; sometimes both webs are margined with brown; sometimes the outer is white entirely; sometimes the brownish wash on the back is more distinct." (*Hist. N. Am. B.*)

Some specimens have more or less distinct white wing-bands.

While the Snowbird is known to every one as a common and familiar winter resident, there are few people but to whom its coming and going is a mystery; and the question is often asked, "What becomes of the Snowbirds in summer, and where do they breed?" The summer home of this interesting species includes the colder region of the far North from northern Maine and the more eastern British Provinces to Alaska, north to the Arctic "barren grounds," and along the higher portions of the Alleghanies for an undetermined distance southward.*

"About Calais [Maine], and in all the islands of the Bay of Fundy, and throughout New Brunswick and Nova Scotia," Dr. Brewer "found this by far the most common and familiar species, especially at Pictou, where it abounded in the gardens, in repeated instances coming within the out-buildings to build its nests. In a woodshed connected with the dwelling of Mr. Dawson, my attention was called to the nests of several of these birds, built within reach of the hand, and in places where the family were passing and repassing throughout the day * * * On my ride from Halifax to Pictou, they reminded me of the common *Spizella socialis*, but were, if anything, more fearless and confiding, coming into the room where the family were at their meals, and only flying away when they had secured a crumb of sufficient size."

In all probability the Snowbird does not breed, even occasionally, anywhere within the limits of the State of Illinois; nevertheless, individuals may in extremely rare instances be found several weeks after others have departed for the North, these having probably received some injury which retards, if it does not altogether prevent,

*On the high mountains of western North Carolina, eastern Tennessee, and northern Georgia, an allied race, or perhaps distinct species, is resident. This has recently (in "The Auk," vol. iii, Jan. 1886, p. 108) been described by Mr. Brewster, as *J. hyemalis carolinensis.*

their migration. Professor Forbes informs me of such an instance which came under his own observation, as follows:

"While on a recent trip to southern Illinois, I astonished myself by shooting, June 9, one mile from the Ohio river, near Elizabethtown, in Hardin county, an adult specimen of the Common Snowbird (*Junco hyemalis*). I killed the bird from a tree in the edge of a wood. I neither heard nor saw another of the species there." (See "Nuttall Bulletin," July, 1881, p. 180.)

Junco hyemalis oregonus (Towns.)

OREGON JUNCO.

Popular synonyms. Black-headed Snowbird; Oregon Snowbird.

Fringilla oregona Towns. Jour. Phil. Ac. vii, 1837, 188.—Aud. Orn. Biog. v, 1839, 68, pl. 398.
Niphœa oregona Aud. Synop. 1839, 107; B. Am. iii, 1841, 91, pl. 168.
Junco oregonus Scl. 1857.—Baird, B. N. Am. 1858, 466; Cat. N. Am. B. 1859, No. 352.—Coues, Key, 1872, 141; Check List, 1873, No. 175; 2d ed. 1882, No. 263; B. N. W. 1874, 142. B. B. & R. Hist. N. Am. B. i, 1874, 584, pl. 26, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 218.

Hab. Pacific coast of North America, breeding from higher mountains of southern California north to Sitka; in winter throughout the western United States, and even straggling to the Atlantic States (Kansas, Illinois, etc.)

In its habits and notes this bird is so completely a counterpart of the common eastern Snowbird (*J. hyemalis*) that the writer is unable to discover, from the accounts of writers or from his own experience, any peculiarities whatsoever. It is, however, very different in its plumage, as may be seen from the description given above, and the comparative diagnoses on page 277.

Genus **PEUCÆA** Audubon.

Peucæa Aud. Synop. 1839, 112. Type *Fringilla bachmanii* Aud.

"Gen. Char. Bill moderate. Upper outline and commissure decidedly curved. Legs and feet, with the claws, small; the tarsus about equal to the middle toe; the lateral toes equal, their claws falling considerably short of the middle one; the hind toe reaching about to the middle of the latter. The outstretched feet reach rather beyond the middle of the tail. The wing is very short, reaching only to the base of the tail; the longest tertials do not exceed the secondaries, while both are not much short of the primaries; the outer three or four quills are graduated. The tail is considerably longer than the wings; it is much graduated laterally; the feathers, though long, are peculiarly narrow, linear, and elliptically rounded at the ends.

"Color beneath plain whitish or brownish, with a more or less distinct dusky line each side of the chin. Above with broad obsolete brown streaks or blotches. Crown uniform, or the feathers edged with lighter." (*Hist. N. Am. B.*)

Only one species of this southern genus is known to occur in Illinois. Another however, may be expected, at least as a straggler, and for this reason the comparative characters of the two are given here.

1. **P. æstivalis.** *Adult:* Above reddish brown, streaked with gray, and usually spotted on the back with black; beneath dull buffy, whitish on the belly. Middle tail-feathers without distinct bars.

   α. *æstivalis.* Crown streaked with blackish, and black streaks on back always very distinct. *Hab.* Florida and lower Georgia.

   β. *bachmanii.* Crown without black streaks, and black streaks on back frequently obsolete; general coloration much more "sandy" above, and clearer, or less dingy, buff below. *Hab.* North and South Carolina, west to eastern Texas, north to southern Illinois and Indiana.

2. **P. cassini.** Above brownish gray, spotted with grayish brown and black, but with no rusty; lower parts nearly uniform brownish white or pale brownish gray. Middle tail-feathers very distinctly barred with dusky. *Hab.* Southwestern U. S., north to Kansas.

Peucæa æstivalis bachmanii (Aud.)

BACHMAN'S SPARROW.

Popular synonyms. Illinois Sparrow; Oak-wood Sparrow; Bachman's Finch.

Peucæa æstivalis RIDGW. Am. Nat., July 1872, 430 (Wabash Co., Illinois); Ann. N. Y. Lyc. x, Jan. 1874, 373 (do.); Proc. Boston Soc. xvi, Feb. 18, 1874, 308, 326 (do., summer resid.); Bull. Nutt. Orn. Club, iii, Oct. 1878, 164 ("extremely local and quite rare").—NELSON, Bull. Essex. Inst., ix, 1877, 36, 49 (Mt. Carmel, Wabash Co., and Fox Prairie, Richland Co., Illinois).

Peucæa illinoënsis RIDGW. Bull. Nutt. Orn Club, Oct. 1879, 219 (southern Illinois to central Texas).

Peucæa æstivalis illinoënsis RIDGW. Nom. N. Am. B. 1881, No. 226*a*.—COUES, 2d Check List, 1882, No. 252.

Peucæa æstivalis bachmani BREWST. Auk, ii, Jan. 1885, 106.

HAB. Open woods, old fields, etc., in semi-prairie districts of the lower Mississippi Valley and Gulf States; north in summer to Richland, Lawrence, and Wabash counties, Illinois; Knox and Monroe counties,* Indiana; and Nelson county, Kentucky; east to Lookout Mountain, Tennessee, Alabama, and the Carolinas; southwest to "Lower Cross Timbers" and "Post Oak Woods" of Cook county, Texas.

SP. CHAR. *Adult.* Above sandy ferruginous, indistinctly streaked with light ash-gray, these streaks broadest on the back and middle line of the crown; interscapulars sometimes marked with narrow central streaks of black. Outer surface of the wings light ferruginous, the greater coverts less reddish and edged with paler; tertials dusky brown, bordered terminally with pale reddish ashy; outer surface of the secondaries ferruginous. Tail uniform grayish brown, the edges of the feathers more ashy. Sides of the head and neck, throat, jugulum, and entire sides, deep dingy buff, this color most distinct across

*In a letter dated April 27, 1884, Professor David S. Jordan, President of the Indiana State University, writes me as follows: "It may perhaps interest you to know that two specimens of *Peucæa æstivalis illinoënsis* have been taken at Bloomington (April 24). They were shot in a brush heap."

the breast, paler on the throat and chin; a postocular streak of ferruginous along the upper edge of the auriculars; sides of the neck streaked with ferruginous; an indistinct dusky streak on each side of the throat, along the lower edge of the malar region; abdomen dull white; crissum creamy buff; edge of the wing, from the carpal to the carpophalangeal joint, bright yellow. Bill pale horn-color, the maxilla darker; iris brown; legs and feet pale brown.

Total length, about 6.00; wing, 2.25–2.60 (2.51); tail, 2.40–2.95 (2.69); bill, from nostril to tip, .30–.33; depth through base, .27–.30 (.29); tarsus, .70–.82 (.77); middle toe, .55–.60 (.59). *

Compared with typical *P. æstivalis*, in corresponding plumage, the differences of coloration are at once apparent. The upper parts are much paler, and more "sandy" in hue, and the black mesial streaks which in *æstivalis* mark *all* the feathers (except those of the nape and wings) are either entirely wanting, or confined to the interscapular region; the breast and sides are very distinctly ochraceous buff, these parts in *æstivalis* being dull buffy grayish. The proportions are very nearly the same in the two species, but *bachmanii* has a longer wing and a thicker bill, the average of five specimens, compared with six of *æstivalis*, being 2.51 and 0.29 respectively, against 2.40 and 0.26. *P. arizonæ* is so different as scarcely to need comparison, having, like *æstivalis*, the whole crown streaked with black; the general hue of the upper parts more of a hair-brown, and the lower parts nearly uniform pale buffy grayish, the abdomen not conspicuously lighter. It is also larger, measuring, wing 2.60, and tail 2.85.

While little is really known regarding the distribution of this species in Illinois, it probably occurs locally—that is, in suitable localities—throughout that portion of the State lying south of the parallel of 39°; and perhaps it extends still further north. It is emphatically a bird of open oak woods, where large white and post oaks prevail, with grass land immediately adjoining, or where the intervals between the trees consist of sward rather than undergrowth; but neglected fields, grown up to weeds, and in which old dead trees are left standing, are also its favorite haunt.

Bachman's Sparrow first came under my observation early in June, 1871, when several were seen and others heard, about halfway between Mount Carmel and Olney, the former in Wabash, the latter in Richland county, Illinois.

*These measurements represent the extremes and averages of ten adults.

After leaving this locality the species was lost sight of until the 11th of August following, upon our return to Mount Carmel. At the latter place it was found to be rather rare in certain places just outside the town limits, the localities frequented being invariably neglected weedy fields in which scattered dead trees were standing. Unlike most birds, this species sang with the greatest vigor, and frequently during the sultry midday, when the sky was brightest and the heat intense—the thermometer ranging from 90° to 103° in the shade. The song, while reminding one somewhat of the plaintive chant of the Field Sparrow (*Spizella pusilla*), was far sweeter and altogether louder; the modulation, as nearly as can be expressed in words, resembling the syllables *théééééé-thut, lut, lut, lut*, the first being a rich silvery trill, pitched in a high musical key, the other syllables also metallic, but abrupt, and lower in tone.

In July and August, 1875, several specimens of this species were collected by Messrs. E. W. Nelson and F. T. Jencks in the vicinity of Mount Carmel and on Fox Prairie, the latter in Richland county, about thirty-five miles to the northward of Mount Carmel. Mr. Nelson thus records his observations (*Bull. Essex Inst.*, Vol. IX., p. 38):

"Rather common. Those obtained were found about the fences or brush piles in half-cleared fields. They were shy and quite difficult to secure from their habit of diving into the nearest shelter when alarmed, or skulking, wren-like, along the fences, dodging from rail to rail. One was observed singing from a fence stake, but seeing the intruder it stopped abruptly and darted into a patch of weeds."

Genus **MELOSPIZA** Baird.

Melospiza Baird, Birds N. Am. 1858, 478. Type, *Fringilla melodia* Wils., *F. fasciata* Gmel.

"Gen. Char. Body stout. Bill conical, very obsoletely notched, or smooth; somewhat compressed. Lower mandible not so deep as the upper. Commissure nearly straight. Gonys a little curved. Feet stout, not stretching beyond the tail; tarsus a little longer than the middle toe; outer toe a litle longer than the inner; its claws not quite reaching to the base of the middle one. Hind toe appreciably longer than the middle one. Wings quite short and rounded, scarcely reaching beyond the base of the tail; the tertials considerably longer than the secondaries; the quills considerably graduated; the fourth longest; the first not longer than the tertials, and almost the shortest of the primaries. Tail moderately long, rather longer from coccyx than the wings, and considerably graduated; the feathers oval at the tips, and not stiffened. Crown and back similar in color, and streaked; beneath thickly streaked, except in *M. georgiana*. Tail immaculate. Usually nest on ground; nests strongly woven of grasses and fibrous stems; eggs marked with rusty brown and purple on a ground of a clay color."

"This genus differs from *Zonotrichia* in the shorter, more graduated tail, rather longer hind toe, much more rounded wing, which is shorter; the tertiaries longer; the first quill almost the shortest, and not longer than the tertials. The under parts are spotted; the crown streaked, and like the back." (*Hist. N. Am. B.*)

The three species which occur in eastern North America (one of them peculiar to the Atlantic side) may be distinguished by the following characters:

A. Breast and sides distinctly streaked, at all ages.

a. Maxillary stripe and jugulum white, like other lower parts, the streaks on breast broad, cuneate.

1. **M. fasciata.** Above rusty grayish, streaked with brown and black. Wing about 2.70; tail nearly 3.00.*

b. Maxillary stripe and jugulum buff, the other lower parts chiefly white; streaks on jugulum linear.

2. **M. lincolni.** Above olive-brown, streaked with black. Wing 2.60, or less; tail 2.50, or less.*

B. Breast and sides without streaks, except in young (first plumage).

3. **M. georgiana.** Breast and sides of head ashy; wings chestnut-rufous; back olive-brown, broadly streaked or spotted with black. *In breeding plumage*, crown (of both sexes) bright chestnut.

Melospiza fasciata (Gmel.)

Fringilla fasciata Gmel. S. N. i, 1788, 922.

Melospiza fasciata Scott, Am. Nat. x, 1876, 18.—Ridgw. Nom. N. Am. B. 1881, No. 231.—Coues, 2d Check List, 1882, No. 244.

Fringilla melodia Wils. Am. Orn. ii, 1810, 125, pl. 16, fig. 4.—Aud. Orn. Biog. i, 1831, 126; v, 507, pl. 25; Synop. 1839, 120; B. Am. iii, 1841, 147, pl. 189.—Nutt. Man. i, 1832, 486.

Melospiza melodia Baird, B. N. Am. 1858, 477; Cat. N. Am. B. 1859, No. 227.—Coues, Key, 1872, 139; Check List, 1873, No. 146; B. N. W. 1874, 138.—B. B. & R. Hist. N. Am. B. ii, 1874, 19, pl. 27, fig. 6.

Hab. Eastern United States and British Provinces, west to, and including, the Great Plains; wintering from about 50° to the Gulf coast, breeding in northern States and along the Atlantic sea-board. (In western portions of the continent, represented by numerous local or geographical races.)

"Sp. Char. General tint of upper parts rufous and distinctly streaked with rufous-brown, dark brown and ashy-gray. The crown is rufous, with a superciliary and median stripe of dull gray, the former lighter; nearly white anteriorly, where it sometimes has a faint shade of yellow, principally in autumn; each feather of the crown with a narrow streak of black, forming about six narrow lines. Interscapulars black in the center, then rufous, then pale grayish on the margin, these three colors on each feather very sharply contrasted. Rump grayer than upper tail-coverts, both with obsolete dark streaks. There is a whitish maxillary stripe, bordered above and below by one of dark rufous brown, and with another from behind the eye. The under parts are white; the jugulum and sides of body streaked with clear dark brown, sometimes with a rufous suffusion. On the middle of the breast these marks are rather aggregated so as to form a spot. No distinct white on tail or wings. Length of male, 6.50; wing, 2.58; tail, 3.00. Bill pale brown above; yellowish at base beneath. Legs yellowish.

* In western specimens the tail is sometimes half an inch longer.

"Specimens vary somewhat in having the streaks across the breast more or less sparse, the spot more or less distinct. In autumn the colors are more blended, the light maxillary stripe tinged with yellowish, the edges of the dusky streaks strongly suffused with brownish rufous.

"The young bird has the upper parts paler, the streaks more distinct; the lines on the head scarcely appreciable. The under parts are yellowish; the streaks narrower and more sharply defined dark brown." (*Hist. N. Am. B.*)

While the Song Sparrow breeds in the extreme northern part of Illinois, it is known in the more southern portions only as a winter resident. This is somewhat remarkable, since along the Atlantic coast it is one of the most abundant summer residents throughout Maryland and Virginia, in the same latitudes as southern Illinois. The writer has elsewhere (Proc. Boston Soc. Nat. Hist. Vol. XVI., 1874, p. 9) called attention to this fact, as follows:

"In southern Iowa, according to Mr. Trippe (Proc. Boston Soc. Nat. Hist., Oct., 1872, p. 237), the Song Sparrow is 'abundant in spring and fall, but not observed to breed. Shy and retiring, a complete contrast to the eastern Song Sparrow.' In southern Illinois this is also the case, the species being there a winter sojourner, abundant, but very retiring, inhabiting almost solely the bushy swamps in the bottom-lands, *and unknown as a song bird.* The same are also probably its habits throughout Illinois and the adjacent districts. This is a remarkable instance of variation in habits with longitude of one geographical race, since in the Atlantic States it breeds abundantly, as far south at least as the parallel of 38°, and is besides one of the most familiar of the native birds."

As far north at least as Wabash, Lawrence, and Richland counties, in this State, the Song Sparrow makes its appearance in the fall along with the White-throated and Swamp Sparrows, and remains all winter in company with these and other species, departing with them in the spring. I have there heard its song but on two or three occasions, and then only in the spring, just before they took their departure.*

The song of this bird, although sufficiently fine to attract attention, is by no means equal to that of many other species of its

* Since the above was written, Mr. J. A. Balmer, of Paris, Edgar county, has informed me that the Song Sparrow is a not uncommon summer resident of that vicinity, and has sent a nest and eggs, obtained in his garden, to prove the correctness of his identification,

family. But this Sparrow is so abundant and so familiar in its habits, that it is better known than most others; it is also very liberal with the supply of music it gives us; and these facts, taken together, undoubtedly have more to do with its popularity than has the quality of its song.

Melospiza lincolnii (Aud.)

LINCOLN'S SPARROW.

Popular synonyms. Lincoln's Finch; Lincoln's Song Sparrow.

Fringilla lincolnii AUD. Orn. Biog. ii, 1834, 539, pl. 193.—NUTT. Man. 2d ed. i, 1840, 569.
Peucæa lincolnii AUD. Synop. 1839, 113; B. Am. iii, 1841, 116, pl. 177.
Melospiza lincolnii BAIRD, B. N. Am. 1858, 482; Cat. N. Am. B. 1859, No. 368.—COUES, Key, 1872, 138; Check List, 1873, No. 167; 2d ed. 1882, No. 242; B. N. W. 1874, 135.—B. B. & R. Hist. N. Am. B. ii, 1874, 31, pl. 27, fig. 13.—RIDGW. Nom. N. Am. B. 1881, No. 234.

HAB. Northern North America and higher mountains of western United States, breeding at high elevations, nearly to the Mexican boundary; thence northward to Alaska (Yukon district) and Labrador, besides various intermediate points; winters in Southern States, Mexico, and Guatemala. (NOTE. The distribution of this bird corresponds very closely, at all seasons, with that of *Zonotrichia leucophrys*. In the Yukon and McKenzie River districts, however, instead of the latter it is associated with the *Z. intermedia*,—otherwise their respective distribution is quite identical.)

"SP. CHAR. General aspect above, that of *M. melodia*, but paler and less reddish. Crown dull chestnut, with a median and lateral or superciliary ash-colored stripe; each feather above streaked centrally with black. Back with narrow streaks of black. Beneath white, with maxillary stripe curving round behind the ear-coverts; a well-defined band across the breast, extending down the sides, and the under tail-coverts, of brownish yellow. The maxillary stripe margined above and below with lines of black spots and a dusky line behind the eye. The throat, upper part of breast, and sides of the body, with streaks of black, smallest in the middle of the former. The pectoral bands are sometimes paler. Bill above dusky; base of lower jaw and legs yellowish. Length, 5.60; wing, 2.60. (*Hist. N. Am. B.*)

Instead of being the rare bird that it is commonly supposed to be, Lincoln's Sparrow is at times almost as numerous as the Swamp Sparrow; and the fact that it associates freely with the latter species, which it closely resembles in habits and general appearance, may in a measure account for its supposed scarcity. In the southern portion of the State a greater or less number usually pass the winter in company with *M. georgiana*, in the dense brushwood and rank dead herbage of swamps and marshes, in the

bottom-lands. In the northern parts, however, according to Mr. Nelson, it is migratory. Mr. Nelson's remarks concerning it are as follows:

"Common during the migrations, from May 8th to 20th, and September 20th to October 15th. Have seen several specimens during the breeding season, and the last of May, 1875, as I was walking through a patch of weeds, a female started from a few feet in advance of me, while my attention was attracted in another direction, and ran off with half-spread wings. It was shot, and showed unmistakable sign of incubation, but a protracted search failed to reveal the nest. Specimens were taken in July, 1875, near Waukegan, by Mr. Rice."

Melospiza georgiana (Lath.)

SWAMP SPARROW.

Popular synonyms. Swamp Song Sparrow; Spotted Swamp Sparrow.

Fringilla georgiana LATH. Ind. Orn. i, 1790, 460.— NUTT. Man. i, 1832, 502; 2d ed. i, 1840, 588. (s. g. *Ammodromus*).

Melospiza georgiana RIDGW. Proc. U. S. Nat. Mus. viii, 1885, 355.

Fringilla palustris WILS. Am. Orn. iii, 1811, 49, pl. 22, fig. 1.—AUD. Orn. Biog. i, 1831, 331; v, 1839, 508, pl. 64.

Ammodromus palustris AUD. Synop. 1839, 111; B. Am. iii, 1841, 110, pl. 175.

Melospiza palustris BAIRD, B. N. Am. 1858, 483; Cat. N. Am. B, 1859, No. 369.—COUES, Key, 1872, 138; Check List, 1873, No. 168; 2d ed. 1882, No. 243; B. N. W. 1874, 137.—B. B. & R. Hist. N. Am. B. ii, 1874, 34, pl. 28, figs. 1, 2.—RIDGW. Nom. N. Am. B. 1881, No. 233.

HAB. Eastern United States and British Provinces, north, occasionally, to Labrador and Newfoundland; west, casually, to Utah; breeding from northern border of United States northward, and wintering chiefly south of 38°.

"SP. CHAR. Middle of crown uniform chestnut; forehead black; superciliary streak, sides of head and back, and sides of neck, ash. A brown stripe behind the eye. Back with broad streaks of black, which are edged with rusty yellow. Beneath whitish, tinged with ashy anteriorly, especially across the breast, and washed with yellowish brown on the sides. A few obsolete streaks across the breast, which become distinct on its sides. Wings and tail strongly tinged with rufous; the tertials black, the rufous edgings changing abruptly to white towards the end. Length, 5.75; wing, 2.40. *Female* with the crown scarcely reddish, streaked with black, and divided by a light line. *Young* conspicuously streaked beneath the head; above nearly uniform blackish.

"In autumn the male of this species has the feathers of the crown each with a black streak, and the centre of the crown with an indistinct light stripe, materially changing its appearance. The forehead is usually more or less streaked with black." (*Hist.. N. Am. B.*)

In southern Illinois the Swamp Sparrow congregates in immense numbers—perhaps exceeding those of any other species—in the sheltered swamps of the bottom-lands. It breeds in the northern portion of the State, but how far southward its breeding range extends is as yet undetermined. Mr. Nelson records it as being, in Cook county, "an abundant summer resident, far outnumbering *M. melodia*, although to one who has not frequently visited its favorite marshes at all seasons, this would seem improbable. Arrives the last of March and departs the last of October."

The habits of this species are in a great measure similar to those of the Song Sparrow, although it is much less familiar than the last-named species, preferring secluded swamps and marshes rather than parks, gardens, and door-yards. In *History of North American Birds* (Vol. II., pp. 35, 36), Dr. Brewer thus describes its song:

"Except in regard to their song, Wilson's account of their habits, so far as it goes, is quite accurate, although this bird really does have quite a respectable song, and one that improves as the season advances. At first it is only a succession or repetition of a few monotonous, trilling notes, which might easily be mistaken for the song of the Field Sparrow, or even confounded with the feebler chant of the *socialis*, although not so raised as the former, and is much more sprightly and pleasing than the other. Still later its music improves, and more effort is made. Like the Song Sparrow, it mounts some low twig, expands its tail-feathers, and gives forth a very sprightly trill, that echoes through the swampy thicket with an effect which, once noticed and identified with the performer, is not likely to be ever mistaken. Nuttall calls this song loud, sweet, and plaintive. It is to my ear more sprightly than pathetic, and has a peculiarly ventriloquistic effect, as if the performer were at a much greater distance than he really is."

Subfamily **PASSERELLINÆ.**

Char. Toes and claws very stout; the lateral claws reaching beyond the middle of the middle one; all very slightly curved.

"Bill conical, the outlines straight; both mandibles equal; wings long, longer than the even tail, or slightly rounded, reaching nearly to the middle of its exposed portion. Hind claw longer than its digit; the toe nearly as long as the middle toe; tarsus longer than

the middle toe. Brown above, either uniformly so or faintly streaked; triangular spots below.

"This section embraces a single North American genus, chiefly characterized by the remarkable elongation of the lateral claws, as well as by the peculiar shape and large size of all the claws; the lateral, especially, are so much lengthened as to extend nearly as far as the middle. The only approach to this, as far as I recollect, among United States *Conirostres*, is in *Pipilo megalonyx*, and *Xanthocephalus icterocephalus*. (*Hist. N. Am. B.*)

Genus **PASSERELLA** Swainson.

Passerella Swainson, Class. Birds, ii, 1837, 288. Type, *Fringilla iliaca* Merrem.

"Gen. Char. Body stout. Bill conical, not notched, the outlines straight; the two jaws of equal depth; roof of upper mandible deeply excavated, and vaulted; not knobbed. Tarsus scarcely longer than the middle toe; outer toe little longer than the inner its claw reaching to the middle of the central one. Hind toe about equal to the inner lateral; the claws all long, and moderately curved only; the posterior rather longer than the middle, and equal to its toe. Wings long, pointed, reaching to the middle of the tail; the tertials scarcely longer than secondaries; second and third quills longest; first equal to the fifth. Tail very nearly even, scarcely longer than the wing. Inner claw contained scarcely one and a half times in its toe proper.

"*Color.* Rufous or slaty; obsoletely streaked or uniform above; thickly spotted with triangular blotches beneath." (*Hist. N. Am. B.*)

A single species of this genus belongs to North America. It is represented in the West by *P. schistacea*, Baird, in the Rocky Mountains and west to the Sierra Nevada; by *P. megarhyncha*, Baird, in the southern portion of the Pacific coast ranges, and by *P. unalaschcensis* (Gmel.) along the more northern portion of the Pacific Coast. All these forms intergrade either with one another or with *P. iliaca*, but whether these intergradations are due to hybridism or bear the more important significance which has been assigned to them, future knowledge alone can decide.

Passerella iliaca (Merrem).

FOX SPARROW.

Popular synonyms. Fox-colored Sparrow; Rufous Sparrow.

Fringilla iliaca Merrem, Beit. Gesch. Vog. ii, 1786-87, 49. pl. 10.—Nutt. Man. i, 1832, 514.—Aud. Orn. Biog. ii, 1834, 58; v, 1839, 512, pl. 108; Synop. 1839, 119; B. Am. iii, 1841, 139, pl. 185.

Passerella iliaca Sw. 1837.—Baird, B. N. Am. 1858, 488; Cat. N. Am. B. 1859, No. 374.—Coues, Key, 1872, 147; Check List, 1874, No. 188; 2d ed. 1882, No. 282; B. N. W. 1874, 160.—B. B. & R. Hist. N. Am. B. ii, 1874, 59, pl. 78, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 235.

Fringilla ferruginea Gmel. S. N. i, 1788, 921.

Fringilla rufa Wils. Am. Orn. ii, 1811, 53, pl. 22, fig. 4.

Hab. Northern North America, including Alaska (except coast from Kodiak eastward); breeding in arctic and subarctic districts, and southeastward to mouth of the St. Lawrence; in winter eastern United States, chiefly south of 40°.

"Sp. Char. General aspect of upper parts foxy red, the ground-color and the sides of neck being ashy; the interscapular feathers each with a large blotch of fox-red; this color glossing the top of head and nape, sometimes faintly, sometimes more distinctly; the rump unmarked; the upper coverts and surface of the tail continuous fox-red. Two narrow white bands on the wing. Beneath, with under tail-coverts and axillars, clear white; the sides of head and of throat, the jugulum, breast, and sides of body, conspicuously and sharply blotched with fox-red; more triangular across breast, more linear and darker on sides. Sometimes the entire head above is continuously reddish. First quill rather less than fifth. Hind toe about equal to its claw. Length, 7.50; wing, 3.50; tail, 2.90; tarsus, .87; middle toe, without claw. .67; hind claw, .35." (*Hist. N. Am. B.*)

In summer, the ash is more predominant above; in winter, it is overlaid more or less by a wash of rufous, as described above.

Young, first plumage (="*P. obscura*" Verrill). "Color above rufous brown, becoming bright rufous on the rump and exposed portion of the tail, but a shade darker than in *P. iliaca*; head uniform brown, with a slight tinge of ash; feathers of the back centred with a streak of darker brown. Wings nearly the same color as the back, with no white bands; outer webs of the quills rufous, inner webs dark brown; secondary coverts rufous, with dark brown centres; primary coverts uniform brown. Beneath dull white, with the throat and breast thickly covered with elongated triangular spots and streaks of dark reddish brown; sides streaked with rufous brown; middle of abdomen with a few small triangular spots of dark brown; under tail-coverts brownish white, with a few small spots of bright rufous; the tibiæ dark brown. The auriculars are tinged with reddish brown. Bristles at the base of the bill are numerous, extending over the nostrils. Tail rather long, broad, and nearly even. Third quill longest; second and fourth equal, and but slightly shorter; first intermediate between the fifth and sixth, and one fourth of an inch shorter than the third.

"Length, 6.75; extent of wings, 10.75; wing, 3.35; tarsus, 1 inch."

This stage is stated to be "darker in all parts; the feathers of the back are rufous brown, centred with darker, instead of ash centred with brownish red; the two white bands on the wing are wanting; the breast and throat are thickly streaked with elongated spots of dark reddish brown, while in *P. iliaca* the spots are less numerous, shorter and broader, and bright rufous, and the central part of the throat is nearly free from spots; the under tail-coverts are brownish white, with rufous spots, instead of nearly pure white."

This fine Sparrow, distinguished, as its name indicates, by its bright rufous coloring, is a winter resident in the southern and a migrant in the northern portions of the State. It inhabits the densest thickets where, in company with the Chewink, Cardinal, and other species, it passes much of its time on the ground, scratching among the dead leaves for its food. Its breeding range is essentially identical with that of the Snowbird (*Junco hyemalis*). Those who have heard his song in his summer home

pronounce it a very fine performance. Snatches of this song may be occasionally heard in the spring before the northward exodus, and his notes at this season certainly are remarkable for their richness. In *History of North American Birds* (Vol. II., p. 52), Dr. Brewer thus describes the full song: "In the spring the male becomes quite musical, and is one of our sweetest and most remarkable singers. His voice is loud, clear, and melodious; his notes full, rich, and varied; and his song is unequaled by any of this family that I have ever heard.

Subfamily **SPIZINÆ**

Char. Bill variable, always large, much arched, and with the culmen considerably curved; sometimes of enormous size, and with a greater development backward of the lower jaw, which is always appreciably, sometimes considerably, broader behind than the upper jaw at its base; nostrils exposed. Tail rather variable. Bill generally black, light blue, or red. Wings shorter than in the first group. Gape almost always much more strongly bristled. Few of the species sparrow-like or plain in their appearance; usually blue, red, or black and white; except in one or two instances the sexes very different in color.

"The preceding diagnosis is intended to embrace the brightly colored passerine birds of North America, different in general appearance from the common Sparrows. It is difficult to draw the line with perfect strictness, so as to separate the species from those of the preceding group, but the bill is always more curved, as well as larger, and the colors are brighter. They resemble quite closely, at a superficial glance, the *Coccothraustinæ*, but may be readily distinguished by the absence of the projecting tufts surrounding the base of the upper mandible, shorter, more rounded wings, and longer tarsi.

"The genera may be most conveniently arranged as follows: (*Hist. N. Am. B.*)

A. Wings decidedly longer than the tail. Eggs plain blue or white, unspotted.

a. Feet very stout, reaching nearly to the end of the tail. Species terrestrial.

Calamospiza. Bill moderate, the commissure with a deep angle posteriorly and prominent lobe behind it; anteriorly nearly straight; commissure of lower mandible with a prominent angle. Outer toe longer than the inner, both nearly as long as the posterior. Outer four primaries about equal, and abruptly longer than the rest. Tertials nearly equal to primaries. Tail-feathers broad at tips. Color black with white spot on wing in male, brownish streaks in female. Nest on or near ground; eggs plain pale blue.

Spiza. Bill weaker, the commissure with a more shallow angle, and much less prominent sinuation behind it; anteriorly distinctly sinuated. Outer toe shorter than inner, both much shorter than the posterior one. First primary longest, the rest successively shorter. Tertials but little longer than secondaries. Tail-feathers attenuated at tips. Color: back brown streaked with black; throat white; jugulum yellow or ashy; with or without black spot on fore neck. A yellow or white superciliary stripe. Nest on or near ground; eggs plain pale blue.

b. Feet weaker, scarcely reaching beyond lower tail-coverts; species arboreal.

a. Size large (wing more than 3.50 inches)

Habia. Upper mandible much swollen laterally. Colors: no blue; upper parts conspicuously different from the lower. Wings and tail with white patches; axillars and lining of wing yellow or red. Female streaked. Nest in a tree or bush; eggs greenish, thickly spotted.

Guiraca. Upper mandible flat laterally. Colors: *Male* deep blue, with two rufous bands on wings; no white patches on wings or tail; axillars and lining of wing blue; *female* olive-brown without streaks. Nest in a bush; eggs plain bluish white.

b. Size very small (wing less than 3.00 inches).

Passerina. Similar in form to *Guiraca.*, but culmen more curved, mandible more shallow, the angle and sinuations of the commissure less conspicuous. Color: *Males* more or less blue, without any bands on wing (except in *C. amœna*, in which they are white); *female* olive-brownish. Nest in a bush; eggs plain bluish white (except in *C. ciris*, in which they have reddish spots).

B. Wing and tail about equal. The smallest of American *Conirostres.* Nest in bushes. Eggs white, spotted.

Sporophila. Bill very short and broad, scarcely longer than high, not compressed; culmen greatly curved. Color chiefly black and white, or brown and gray.

Euetheia. Bill more triangular, decidedly longer than deep, much compressed; culmen only slightly curved, or perfectly straight. Colors dull olive-green and blackish, with or without yellow about the head.

C. Wing much shorter than the tail.

a. Head crested. Prevailing color red. Bill red, orange, yellow, or whitish.

Pyrrhuloxia. Bill pyrrhuline, very short, and with the culmen greatly convex; shorter than high. Hind claw less than its digit; not much larger than the middle anterior one. Tarsus equal to the middle toe. Nest in bush or low tree; eggs white, spotted with lilac and olive.

Cardinalis. Bill coccothraustine, very large; culmen very slightly convex. Wing more rounded. Feet as in the last, except that the tarsus is longer than the middle toe. Nest in bush or low tree; eggs white, spotted with lilac and olive.

b. Head not crested. Colors black, brown, or olive, without red. Bill dusky, or bluish.

Pipilo. Bill moderate; culmen and commissure curved. Hind claw very large and strong; longer than its digit. Tarsus less than the middle toe. Nest on ground or in low bush; eggs white sprinkled with red, or pale blue with black dots and lines around larger end.

Genus **PIPILO** Vieillot.

Pipilo Vieillot, Analyse, 1816, 32. Type, *Fringilla erythropthalma* Linn.

"Gen. Char. Bill rather stout; the culmen gently curved, the gonys nearly straight, the commissure gently concave, with a decided notch near the end; the lower jaw not so deep as the upper; not as wide as the gonys is long, but wider than the base of the upper mandible. Feet large, the tarsus as long as or a little longer than the middle toe; the outer lateral toe a little the longer, and reaching a little beyond the base of the middle claw. The hind claw about equal to its toe; the two together about equal to the outer toe. Claws all stout, compressed, and moderately curved; in some western specimens the claws much larger. Wings reaching about to the end of the upper tail-coverts; short and rounded, though the primaries are considerably longer than the nearly equal secondaries and tertials; the outer four quills are graduated,—the first considerably shorter than the second, and about as long as the secondaries. Tail considerably longer than the wings, moderately graduated externally; the feathers rather broad, most rounded off on the inner webs at the end. The colors vary; the upper parts are generally uniform black or brown, sometimes olive; the under white or brown; no central streaks on the feathers. The hood sometimes differently colored." (*Hist. N. Am. B.*)

As in the case of *Passerella*, this genus has a single eastern representative, with several western congeneric, if not conspecific, forms. *Pipilo*, however, reaches its maximum development in Mexico, where are special species not found elsewhere. One of these Mexican species (*P. maculatus*, SWAINS.) passes by gradual transition into *P. arcticus*, SWAINS., on the eastern slope of the Rocky Mountains, and *P. megalonyx*, BAIRD, on the western side of the same range. The latter gradually blends into *P. oregonus*, BELL, in the northern coast range of California, and the excessively humid, densely wooded Pacific water-shed to the northward. An approach to an intergradation between *P. arcticus* and the eastern *P. erythrophthalmus* was first noted by Professor Baird, in "Birds of North America," p. 513, where mention is made of a specimen from Fort Leavenworth, Kansas, which had "a few white spots on the scapulars only, the wing-coverts without them, exhibiting an approach to *P. arcticus*." On this basis the conspecific relation of the two forms has been argued by at least one author; but the circumstance that two examples of similar character (one of them even more distinctly spotted than the Fort Leavenworth specimen) have been obtained in the vicinity of Washington, D. C., shows how slow we should be to base so important a conclusion upon a fact of this character, however suggestive it may be. Many mistakes of the kind have been made by thus assuming intergradation without sufficient evidence to support the assumption.

Pipilo erythrophthalmus (Linn.)

TOWHEE.

Popular synonyms. Jaree; Chewink; Towink; Ground Robin; Turkey Sparrow.

Fringilla erythrophthalma LINN. S. N. ed. 12, i, 1766, 318.—NUTT. Man. i, 1832, 515.—AUD. Orn. Biog. i. 1832, 150; v, 1839, 511, pl. 29.

Emberiza erythrophthalma GMEL. S. N. i, 1788, 874.—WILS. Am. Orn. vi, 1812, 90, pl. 53.

Pipilo erythrophthalma VIEILL. Gal. Ois. i, 1824, 109, pl. 80.—AUD. Synop. 1839, 124; B. Am. iii, 1841, 167, pl. 195.—BAIRD, B. N. Am. 1858, 512; Cat. N. Am. B. 1859, No. 391.—COUES, Key, 1872, 151; Check List, 1873, No. 204; 2d ed. 1882, No. 301; B. N. W. 1874, 173.—B. B. & R. Hist. N. Am. B. ii, 1874, 106, 109, pl. 31, figs. 2, 3.—RIDGW. Nom. N. Am. B. 1881. No. 237.

HAB. Eastern United States and British Provinces, west to Minnesota, eastern Kansas, and eastern Texas, resident south of 40°. (In Florida replaced by *P. erythrophthalmus alleni*, a smaller race, with white of wings and tail more restricted, and eyes yellowish or white instead of bright red.)

"SP. CHAR. Upper parts generally, head and neck all round, and upper part of the breast, glossy black, abruptly defined against the pure white which extends to the anus, but is bounded on the sides and under the wings by light chestnut, which is sometimes

streaked externally with black. Feathers of throat white in the middle. Under tail-coverts similar to sides, but paler. Edges of outer six primaries with white at the base and on the middle of the outer web. Inner two tertiaries also edged externally with white. Tail feathers black; outer web of the first, with the ends of the first to the third, white, decreasing from the exterior one. Outermost quill usually shorter than ninth, or even than secondaries; fourth quill longest, fifth scarcely shorter. Iris red; said to be sometimes paler, or even white, in winter. Length, 8.75; wing, 3.75; tail, 4.10. Bill black; legs flesh-color. *Female* with black replaced by a rather rufous brown."

"The tail feathers are only moderately graduated on the sides; the outer about .40 of an inch shorter than the middle. The outer tail-feather has the terminal half white, the outline transverse; the white of the second is about half as long as that of the first; of the third half that of the second. The chestnut of the sides reaches forward to the back of the neck, and is visible when the wings are closed.

"A young bird has the prevailing color reddish olive above, spotted with lighter; beneath brownish white, streaked thickly with brown." (*Hist. N. Am. B.*)

Next to the splendid Cardinal, the Chewink is decidedly the finest of our terrestrial Fringillidæ, and in some respects is, perhaps, the most attractive of all. Without brilliant or gaudy coloring, his plumage is yet handsome by reason of its bold contrasts. His notes possess a peculiar charm, and notwithstanding his abode is in the thickets of the wildwood and the remote corners of the farm, no bird is more confiding in the presence of man.

The distribution of this species within the State is very general, thickets only being a condition of its presence. In the southern portion it is a permanent resident, but northward it departs in winter.

"Thickets, bushy pastures and barren tracts on the higher grounds are the favorite resorts of this species. It comes early, reaching the Middle States in April. The bottom poles of an old rail fence, among the briars by the woods, is very likely to be its thoroughfare; and at all times it keeps for the most part on or near the ground. Sit down quietly in the thicket, and you will hear its sharp rustle, as it scratches among the dry leaves,—this hen-like scratching, probably in search of food, being one of its marked characteristics of habit. As it flits from bush to bush, never flying far nor high, you can hear the *whir-r-r-r* of its short, rounded, concave wings, and as it opens its long, fan-like tail with a jerking motion, the white markings contrast strongly with the jet-black figure. It hops, and sidles, and dodges about, in and out through

the brush-piles, the brambles, and the thicket, with a nervous, sparrow-like movement, its tail being often thrown up, after the manner of the Chat or Wren. Frequently it calls out *chewink*, or *towhee*, with a sharp and somewhat prolonged aspirate on the second syllable, thus rendering either of these words, which have become its common names, very distinctly; but in order to get the exact effect, the words must be pronounced just so,—with just such an emphasis and intonation." ("Our Birds in their Haunts," pp. 577, 578.)

Genus **CARDINALIS** Bonaparte.

Cardinalis Bonaparte, P. Z. S. 1837, 11. Type, *Loxia cardinalis* Linn.

"Gen. Char. Bill enormously large; culmen very slightly curved, commissure sinuated; lower jaw broader than the length of the gonys, considerably wider than the upper jaw, about as deep as the latter. Tarsi longer than middle toe; outer toe rather the longer, reaching a little beyond the base of the middle one; hind toe not so long. Wings moderate, reaching over the basal third of the exposed part of the tail. Four outer quills, graduated; the first equal to the secondaries. Tail long, decidedly longer than the wings, considerably graduated; feathers broad, truncated a little obliquely at the end, the corners rounded. Color red [in adult male]. Head crested.

"The essential characters of this genus are the crested head; very large and thick bill, extending far back on the forehead, and only moderately curved above; tarsus longer than middle toe; much graduated wings, the first primary equal to the secondary quills; the long tail exceeding the wings, broad and much graduated at the end." (*Hist. N. Am. B.*)

Only one species in eastern North America, and none in the west, except along the southern border, where two geographical races, *C. cardinalis superbus*, Ridgw., and *C. igneus*, Baird, occur in Arizona and at Cape St. Lucas respectively. In eastern Mexico *C. virginianus coccineus*, Ridgw., replaces *C. cardinalis* proper and *C. superbus*, the latter, however, being the only form in western Mexico. A second species, *C. carneus*, Less., belongs to the western coast of Central America (Acapulco to Realejo), while a third, *C. phœniceus*, Gould, is found in northern South America.

Cardinalis cardinalis (Linn.)

CARDINAL.

Popular synonyms. Redbird; Crested Redbird; Top-knot Redbird; Cardinal Grosbeak; Cardinal Redbird; Corn-cracker; Virginian Redbird; Virginia Nightingale.

Loxia cardinalis Linn. S. N. ed. 10, i, 1758, 172; ed. 12, i, 1766, 300.—Wils. Am. Orn. ii, 1810, 38, pl. 6, figs. 1, 2.

Fringilla cardinalis Bp. 1828.—Nutt. Man. i, 1832, 519.—Aud. Orn. Biog. ii, 1834, 336, pl. 159.

Pitylus cardinalis Aud. Synop. 1839, 131; B. Am. iii, 1841, 198, pl. 203.

Cardinalis virginianus Bp. List, 1838, 35.—Baird, B. N. Am. 1858, 509; Cat. N. Am. B. 1859, No. 390.—Coues, Key, 1872, 151; Check List, 1874, No. 203; 2d ed. 1882, No. 299; B. N. W. 1874, 172.—B. B. & R. Hist. N. Am. B. ii, 1874, 100, pl. 30, figs. 6, 7.—Ridgw. Nom. N. Am. B. 1881, No. 242.

Hab. Eastern United States, chiefly south of 40°, but occasionally in New York, Connecticut, Massachusetts, etc.; west to Nebraska, Kansas, Indian Territory, and Texas. Resident wherever found.

Sp. Char. *Adult male.* Uniform vermilion-red, pure beneath, darker and more brownish above. Lores, anterior portion of malar region, chin, and throat, black, this color meeting across forehead at base of culmen. Bill bright vermilion; iris brown; feet horn-color. *Adult female.* Bill, eyes, and feet as in the male. Red of head and body replaced by olive-gray above, and grayish buff or pale fulvous below, the crest, sometimes also the breast, tinged with red. Black of throat, etc., replaced by grayish. *Young.* Bill dusky. Plumage much as in the adult female, but browner.

Male. Total length, 8.75–9.25 inches; extent, 11.10–12.25; wing, 3.75–4.05; tail, 4.10–4.65; culmen, .75; depth of bill at base, .58–.65.

Female. Total length, 8.25–8.45; extent, 11.25–11.50; wing, 3.40–3.80; tail, 3.85–4.40.

The Cardinal Grosbeak is truly one of the glories of our bird-fauna, being unapproachable in the combination of proud bearing and gaudy coloring, and unexcelled in certain qualities of song. Many writers have pronounced his song monotonous, but these have certainly not heard him at his best. The verdict is undoubtedly a just one when applied to many that we have heard; but there is probably more individual variation in quality of song in this bird than in any other. We have listened with peculiar pleasure to some whose vocal performance was characterized by a clearness and mellow richness of tone, a tender and passionate expression, and persistent vigor, that together were wholly unique. Even the females are good singers, though, as a rule, inferior to the males, and it is extremely probable that the impressions which some writers have received were derived from the songs of birds of this sex.

In the southern portion of the State, few birds are more abundant, it being a common thing in some localities to hear several males singing in earnest rivalry; and the writer has at one time

seen three males and two females near together, picking up corn which had been dropped upon a railroad track from a passing train. Except possibly in the extreme northern portion of the State it is a permanent resident, being apparently not affected in the least by changes in the weather.

Genus **HABIA** Reichenbach.

Habia Reich. Syst. Av. June 1, 1850, pl. lxxviii. Type *Guiraca melanocephala* Swains.
Hedymeles Caban. Mus. Hein. i, 1851, 153. Type *Loxia ludoviciana* Linn.
Zamelodia Coues, Bull. Nutt. Orn. Club, v, April, 1880, 98. Same type.

"Gen. Char. Bill very large, much swollen; lower mandible scarcely deeper than the upper; feet almost coccothraustine; tarsi and toes very short, the claws stronger and much curved, though blunt. First four primaries longest, and nearly equal, abruptly larger than the fifth. Tail broad, perfectly square. Colors: Black, white and red, or black, cinnamon, yellow, and white, on the male; the females brownish, streaked, with the axillars and lining of the yellow." (*Hist. N. Am. B.*)

The only known species of this genus are North American and may be distinguished as follows:

Common Characters. *Males.* Head and upper parts (except rump) deep black. Two broad bands across coverts, a large patch on base of primaries, and terminal half of inner webs of tail-feathers, pure white. Breast carmine or cinnamon; axillars and lining of wing carmine or gamboge. *Females.* Black replaced by ochraceous brown; other parts more streaked.

H. ludoviciana. Rump and lower parts white; lining of wing, and patch on breast, rosy carmine. No nuchal collar. *Female.* Lining of wing saffron-yellow; breast with numerous streaks. *Hab.* Eastern Province of North America, south, in winter, to Ecuador.

H. melanocephala. Rump and lower parts cinnamon; lining of wing and middle of abdomen gamboge-yellow. A nuchal collar of cinnamon. *Female.* Lining of wing lemon-yellow; breast without streaks; abdomen tinged with lemon-yellow.

Habia ludoviciana (Linn.)

ROSE-BREASTED GROSBEAK.

Popular synonyms. Rose-breasted Song Grosbeak; Red-breasted Grosbeak; Potato-bug Bird.

Loxia ludoviciana Linn. S. N. ed. 12, i, 1766, 306.—Wils. Am. Orn. ii, 1810, 135, pl. 17, fig. 2.
Fringilla ludoviciana Bp.—Nutt. Man. i, 1832, 527.—Aud. Orn. Biog. ii, 1834, 166; v, 1839. 513, pl. 127.
Guiraca ludoviciana Sw. 1837.—Baird, B. N. Am. 1858, 497; Cat. N. Am. B. 1859, No. 380.
Goniaphea ludoviciana "Bowditch" Coues, Key, 1872, 148; Check List, 1874, No. 193; B. N. W. 1874, 166.
Coccoborus ludovicianus Aud. Synop. 1839 133; B. Am. iii 1841, 209, pl. 205.
Hedymeles ludovicianus Caban. 1851.—B. B. & R. Hist. N. Am. B. ii, 1874, 70, pl. 30, figs. 4, 5.
Zamelodia ludoviciana Coues, Bull. Nutt. Orn. Club, v, April, 1880, 98; 2d Check List, 1882, No. 289.—Ridgw. Nom. N. Am. B. 1881, No. 244.
Loxia rosea Wils. Am. Orn. ii, 1810, 135.

HAB. Eastern temperate North America, breeding from about 40° (approximately) north to Labrador and the Saskatchewan; winters in Cuba, eastern Mexico, Central America, and northern South America, as far as Ecuador.

"SP. CHAR. Upper parts generally, with head and neck all round, glossy black. A broad crescent across the upper part of the breast, extending narrowly down to the belly, axillaries, and under wing-coverts, carmine. Rest of under parts, rump, and upper tail-coverts, middle wing-coverts, spots on the tertiaries and inner great wing-coverts, basal half of primaries and secondaries, and a large patch on the ends of the inner webs of the outer three tail-feathers, pure white. Length, 8.50 inches; wing, 4.15.

"*Female* without the white of quills, tail, and rump, and without any black or red. Above yellowish brown streaked with darker; head with a central stripe above, and a superciliary on each side, white. Beneath dirty white, streaked with brown on the breast and sides. Under wing-coverts and axillars saffron-yellow.

"In the male the black feathers of the back and sides of the neck have a subterminal white bar. There are a few black spots on the sides of the breast just below the red.

"The young male of the year is like the female, except in having the axillaries, under wing-coverts, and a trace of a patch on the breast, light rose-red.

"The depth of the carmine tint on the under parts varies a good deal in different specimens, but it is always of the same rosy hue." (*Hist. N. Am. B.*)

As may be conjectured from its name, the Rose-breasted Grosbeak is a lovely bird, the fully adult male being decked with a tricolored plumage of deepest black, purest white, and richest rose-red. In the southern portion of the State the species is transient, passing rather hurriedly through in spring and fall; but in the northern portions (perhaps more than the northern half), it is a summer resident. The Rose-breasted Grosbeak is even more remarkable for its beautiful song than for its richness of plumage, and is therefore, and also on account of other qualities which commend it, highly prized as a cage-bird. Says Dr. Brewer:*

"Dr. Hoy, of Racine, supplies some interesting information in regard to the habits and nesting of this species. On the 15th of June, within six miles of that city, he found seven nests, all within a space of not over five acres, and he was assured that each year they resort to the same locality and nest thus socially. Six of these nests were in thorn-trees, all within six to ten feet from the ground, and all were in the central portion of the top. Three of the four parent birds sitting on the nests were males, and this he was told was usually the case. When a nest was disturbed, all the neighboring Grosbeaks gathered around and appeared equally interested. Both nest and eggs so closely resemble those of the Tanagers that it is difficult to distinguish them. Their position is, however, usually different, the Grosbeaks generally nesting in the central portion of a small tree, the Tanagers being placed on a horizontal limb."

*Hist. N. Am. B. vol. ii, pp. 72, 73.

Nor is the Rose-breasted Grosbeak purely an ornamental bird. On the other hand he is one of the most useful that we have as a destroyer of noxious insects. In many parts of the Mississippi Valley he is known as the "Potato-bug Bird," from the fact that he is particularly fond of that most disastrous pest of the farmer.

Genus **GUIRACA** Swainson.

Guiraca Swainson, Zoöl. Jour. iii, Nov. 1827,350. Type, *Loxia cærulea* Linn.

"Gen. Char. Bill very large, nearly as high as long; the culmen slightly curved with a rather sharp ridge; the commissure conspicuously angulated just below the nostril, the posterior leg of the angle nearly as long as the anterior, both nearly straight. Lower jaw deeper than the upper, and extending much behind the forehead; the width greater than the length of the gonys, considerably wider than the upper jaw. A prominent knob in the roof of the mouth. Tarsi shorter than the middle toe; the outer toe a little longer, reaching not quite to the base of the middle claw; hind toe rather longer than to this base. Wings long, reaching to the middle of the tail; the secondaries and tertials nearly equal; the second quill longest; the first less than the fourth. Tail very nearly even, shorter than the wings." (*Hist. N. Am. B.*)

Guiraca cærulea (Linn.)

BLUE GROSBEAK.

Loxia cærulea Linn. S. N. ed. 10, i, 1758,175; ed. 12, i,1766, 306.—Wils. Am. Orn. iii, 1811,78, pl. 24, fig. 6.

Guiraca cærulea Swains. 1827.—Baird, B. N. Am. 1858, 499; Cat. N. Am. B. 1859, No. 382.—B. B. & R. Hist. N. Am. B. ii. 1874, 77, pl. 29, figs. 4,5.—Ridgw. Nom. N. Am. B. 1881, No. 246.—Coues, 2d Check List,1882, No. 291.

Fringilla cærulea "Ill." Licht. Preis-Verz. 1823,22.—Aud. Synop. 1839,132.

Goniaphia cærulea Scl. 1856.—Coues, Key, 1872, 149; Check List, 1874, No. 195; B. N. W. 1874, 169.

Hab. Southern United States, from Atlantic to Pacific (very local, and irregularly distributed); north to Kansas, Illinois, Pennsylvania, and Connecticut (occasionally) or even to Maine and Canada (accidentally).

"Sp. Char. Brilliant blue; darker across the middle of the back. Space around base of bill and lores, with tail-feathers, black. Two bands on the wing across the tips of the middle and secondary coverts, with outer edges of tertiaries, reddish brown, or perhaps chestnut. Feathers on the posterior portion of the under surface tipped narrowly with grayish white. Length, 7.25; wing, 3.50; tail, 2.80.

"*Female* yellowish brown above, brownish yellow beneath; darkest across the breast. Wing-coverts and tertials broadly edged with brownish yellow. Sometimes a faint trace of blue on the tail. The young resembles the female.

"Males from the Pacific coast region (California, Colima, etc.) have tails considerably longer than eastern specimens, while those from California are of a much lighter and less purplish blue, the difference being much the same as between *Sialia sialis* and *S. azurea*.

'Autumnal and winter males have the feathers generally, especially on the back and breast, tipped with light brown, obscuring somewhat the blue, though producing a beautiful appearance." (*Hist. N. Am. B.*)

So far as we know from the published records, and according to the author's experience, the Blue Grosbeak would appear to be a rare bird in Illinois, even in the southern part of the State. This, considering the fact that it is not uncommon in other portions of the country in the same latitudes, both along the Atlantic coast and in the interior, as well as in California, is inexplicable, unless to be accounted for by the supposition that it has been overlooked by collectors or that it may be not uncommon in portions of the State where no ornithological investigations have been made. That both explanations are in a measure correct is extremely probable; for not only is the Blue Grosbeak a very local bird, but it is also, notwithstanding its size, a very inconspicuous one. Unless seen under the most favorable circumstances the adult male does not appear to be blue, but of an ill-defined dusky color, and may easily be mistaken for a Cow Blackbird (*Molothrus ater*) unless most carefully watched; besides, they usually sit motionless, in a watchful attitude, for a considerable length of time, and thus easily escape observation.

The Blue Grosbeak frequents much the same localities as those selected by the Indigo Bird and Field Sparrow, viz., the thickets of shrubs, briers and tall weeds lining a stream flowing across a meadow or bordering a field, or the similar growth which has sprung up in an old clearing. The usual note is a strong harsh *ptchick*, and the song of the male a very beautiful, though rather feeble, warble, somewhat like that of the Purple Finch, but bearing a slight resemblance also to that of the Rose-breasted Grosbeak. The nest and eggs are like a larger "edition" of those of the Indigo Bird. At least two broods are raised during a season, the writer having found a brood of young, just beginning to fly, on the 13th of September, in Fairfax county, Virginia, where the species was somewhat common.

Genus **PASSERINA** Vieillot.

Passerina Vieillot, Analyse, 1816, 30. Type, *Tanagra cyanea* Linn.
Cyanospiza Baird, B. N. Am. 1858, 500. Same Type.

"Gen. Char. Bill deep at the base, compressed; the upper outline considerably curved; the commissure rather concave, with an obtuse, shallow lobe in the middle. Gonys slightly curved. Feet moderate; tarsus about equal to middle toe; the outer lateral toe barely longer than the inner, its claws falling short of the base of the middle; hind toe about equal to the middle without claw. Claws all much curved, acute. Wings

long and pointed, reaching nearly to the middle of the tail; the second and third quills longest. Tail appreciably shorter than the wings; rather narrow, very nearly even.

"The species of this genus are all of very small size, and of showy plumage, usually blue, red, or green, in well-defined areas. The females plain olivaceous or brownish; paler beneath." (*Hist. N. Am. B.*)

The four species of this genus which have been known to occur in the Eastern Province of the United States may be distinguished by the following characters:

A. Wing with two light bands.

1. **P. amœna.** *Male:* Head, neck, and upper parts verditer-blue, duller on the back; breast cinnamon-rufous, the other lower parts white. *Female:* Above grayish brown, the rump tinged with blue; beneath fulvous-white, the breast more buffy.

B. Wing without light bands.

2. **P. cyanea.** *Male:* Uniform rich greenish cobalt-blue, the head more ultramarine or smalt blue. *Female:* Above dull brown; below brownish white, the breast with indistinct darker streaks.
3. **P. versicolor.** *Cutting edge of upper mandible very concave, and culmen much arched. Male:* Bluish purple, the rump and forehead purplish blue, eyelids and occiput dull red. *Female:* Above grayish brown, beneath brownish white.
4. **P. ciris.** *Male:* Eyelids and lower parts vermilion-red; rest of head purplish blue; back bright yellowish green; rump dull red. *Female:* Dull grass-green above, olivaceous yellow beneath. (Young male similar.)

Passerina cyanea (Linn.)

INDIGO BUNTING.

Popular synonyms. Indigo Bird; Green Bird; Blue Linnet; Green Linnet.

Tanagra cyanea Linn. S. N. ed. 12, i, 1766, 315.

Fringilla cyanea Wils. Am. Orn. i, 1810, 100, pl. 6, fig. 5.—Nutt. Man. i, 1832, 473.—Aud. Orn. Biog. i, 1832, 377; v, 1839, 503, pl. 74.

Passerina cyanea Vieill. Nom. Dict. xxv, 1817, 7; 2d Check List, 1382, No. 295.—Ridgw. Nom. N. Am. B. 1881, No. 248.

Spiza cyanea Bp. 1838.—Aud. Synop. 1839, 109; B. Am. iii, 1841, 96, pl. 170.

Cyanospiza cyanea Baird, B. N. Am. 1858, 505; Cat. N. Am. B. 1859, No. 387.—Coues, Key, 1872, 150; Check List, 1874, No. 199; B. N. W. 1874, 171.—B. B. & R. Hist. N. Am. B. ii, 1874, 82, pl. 30, figs. 13, 17.

Hab. Eastern United States, north to Maine and Canada, west to the edge of the Great Plains; winters in Central America and Cuba.

"Sp. Char. *Male.* Blue, tinged with ultramarine on the head, throat, and middle of breast; elsewhere with verdigris-green. Lores and anterior angle of chin velvet-black. Wing-feathers brown, edged externally with dull bluish brown. *Female.* Brown above; whitish, obscurely streaked or blotched with brownish yellow, beneath; tinged with blue on shoulders, edges of larger feathers, and on rump. Immature males similar, variously blotched with blue. Very young birds streaked beneath. Length, about 5.75 inches; wing nearly 3.00.

"In this species, which may be considered the type of the genus, the tail is slightly emarginate; the second quill is longest, the first shorter than the fourth." (*Hist. N. Am. B.*)

This exquisite little bird, so inappropriately named *Indigo* Bird—for the blue color of the male is not at all like the color of indigo, but on the contrary is the richest cerulean-blue, shading into ultramarine,—is one of our most abundant and most generally distributed summer residents. It is an associate of the Field Sparrow, Maryland Yellow-throat, Yellow-breasted Chat, and other birds which frequent thickets about the borders of fields, and its sprightly and vigorous, though somewhat harsh song is heard throughout the sultry days of summer, as the singer occupies a prominent position on the summit of a tree, or, as is frequently the case, on a telegraph wire along a railroad.

Passerina ciris (Linn.)

PAINTED BUNTING.

Popular synonyms. Painted Finch; Nonpareil.

Emberiza ciris Linn. S. N. ed. 10, i, 1758, 177; ed. 12, i, 1766, 313.

Fringilla ciris Wils. Am. Orn. iii, 1811, 68, pl. 24, figs. 1, 2.—Aud. Orn. Biog. i, 1832, 279; v, 517, pl. 53.

Passerina ciris Vieill. Gal. Ois. i, 1824, 81, pl. 66.—Ridgw. Nom. N. Am. B. 1881, No. 251.—Coues, 2d Check List, 1882, No. 292.

Spiza ciris Aud. Synop. 1839, 108; B. Am. iii, 1841, 93, pl. 169.

Cyanospiza ciris Baird, B. N. Am. 1858, 503; Cat. N. Am. B. 1859, No. 384.—Coues, Key, 1872, 149; Check List 1874, No. 196.—B. B. & R. Hist. N. Am. B. ii, 1874, 87, pl. 29, figs. 7, 8.

Hab. Southern Atlantic and Gulf States, north to South Carolina and southern Illinois, west to Arizona; south in winter to Panama.

"Sp. Char. *Male.* Head and neck all around ultramarine blue, excepting a narrow stripe from the chin to the breast, which, with the under parts generally, the eyelids, and the rump (which is tinged with purplish), are vermilion-red. Edges of chin, loral region, greater wing-coverts, inner tertiary, and interscapular region, green; the middle of the latter glossed with yellow. Tail-feathers, lesser wing-coverts, and outer webs of quills, purplish blue. Length about 5.50 inches; wing, 2.70.

"*Female.* Clear dark green above; yellowish beneath. *Young*, like female.

"Tail very slightly emarginated and rounded; second, third, and fourth quills equal; first rather shorter than the fifth.

"The female is readily distinguishable from that of *P. cyanea* by the green instead of the dull brown of the back, and the yellow of the under parts." (*Hist. N. Am. B.*)

The plumage of the Nonpareil, although brilliant, can scarcely be called beautiful, since there is an entire lack of harmony in his tints. The name *Painted* Bunting is therefore peculiarly appropriate,

the juxtaposition of noncomplimentary colors—green, blue, and red—strongly suggesting the inartistic "daubing" of a juvenile would-be artist.

So far as the records are concerned, this species claims a place in the Illinois fauna, from the circumstance that a female was seen by the writer on June 10, 1871, close by the roadside, in Wabash county, and under circumstances which allow of no doubt as to correct identification. The date and also the character of the locality suggest the possibility, if not probability, that a pair were breeding in that vicinity. It will doubtless yet be found breeding in the more southern portions of the State.

The eggs of this species are very different from those of the Indigo Bird, being heavily spotted round the larger end with reddish brown.

Genus **SPIZA** Bonaparte.

Spiza Bonap. Jour. Phil. Ac. iv, pt. i, Aug. 1824, 45.—Type, *Emberiza americana* Gmel.
Euspiza Bonap. Saggio, 1832, 141. Same type.
Euspina Caban. Mus. Hein. i, May, 1851, 133. Same type.

"Gen. Char. Bill large and strong, swollen, and without any ridges; the lower mandible nearly as high as the upper; as broad at the base as the length of the gonys, and considerably broader than the upper mandible; the edges much inflexed, and shutting much within the upper mandible; the commissure considerably angulated at the base, then decidedly sinuated. The tarsus barely equal to the middle toe; the lateral toes nearly equal, not reaching to the base of the middle claw; the hind toe about equal to the middle one without its claw. The wings long and acute, reaching nearly to the middle of the tail; the tertials decidedly longer than the secondaries, but much shorter than the primaries; first quill longest, the others regularly graduated. Tail considerably shorter than the wings, though moderately long; nearly even, although slightly emarginate; the outer feathers scarcely shorter. Middle of back only striped; beneath without streaks." (*Hist. N. Am. B.*)

This genus comes nearest to *Calamospiza*, but has shorter tertials, more slender bill, weaker and more curved claws, etc. It is entirely peculiar to North America,* and contains, so far as known, only two species, one of which is so very rare that but a single specimen has ever been obtained.

*An Old World Bunting (*Emberiza melanocephala* Scop.) has been referred to *Euspiza*, even by some of the leading European authorities; but it is not only generically distinct, but a member of quite a different group of the Family.

SPECIES.

S. americana. Top and side of head light slate, or ash-gray; forehead tinged with greenish yellow. A superciliary stripe, a malar spot, side of breast, and middle line of breast and belly, yellow. Chin white, throat black, shoulders chestnut. Female with the black of the throat replaced by a crescent of spots. *Hab.* Eastern Province of United States; south in winter to New Granada.

S. townsendi. Body throughout (including the jugulum), dark ash, tinged with brownish on the back and wings. Superciliary and malar stripes, chin, throat, and middle of belly, white. A submalar line and a pectoral crescent of black spots. No chestnut on shoulders. *Hab.* Chester county, Pennsylvania.

Spiza americana (Linn.)

DICK CISSEL.

Popular synonyms. Black-throated Bunting; Little Field Lark; Little Meadowlark.

Emberiza americana GMEL. S. N. i, 1788, 871.—WILS. Am. Orn. i, 1808, 411; iii, 1811, 86, pl. 3. fig. 2.—NUTT. Man. i, 1832, 461.—AUD. Orn. Biog. iv, 1838, 579, pl. 384; Synop. 1839, 101; B. Am. iii, 1841, 58, pl. 156.

Euspiza americana BP. 1838.—BAIRD, B. N. Am. 1858, 494; Cat. N. Am. B. 1859, No. 378. —COUES, Key. 1872, 148; Check List, 1874, No. 191; B. N. W. 1874, 165; B. B. & R. Hist. N. Am. B. ii, 1874, 65, pl. 28, figs. 11, 12.

Spiza americana RIDGW. Nom. N. Am. B. No. 254.—COUES, 2d Check List, 1882, No. 287.

HAB. Eastern United States in summer, north to Connecticut and Massachusetts (rarely); west to the Great Plains, and, during migration, to Arizona. Winters within the Tropics, as far south as Colombia.

"SP. CHAR. *Male.* Sides of the head, and sides and back of the neck ash; crown tinged with yellowish green and faintly streaked with dusky. A superciliary and short maxillary line, middle of the breast, axillaries, and edge of the wing yellow. Chin, loral region, patch on side of throat, belly, and under tail-coverts white. A black patch on the throat diminishing to the breast, and ending in a spot on the upper part of the belly. Wing-coverts chestnut. Interscapular region streaked with black; rest of back immaculate. Length, about 6.70; wing, 3.50.

"*Female* with the markings less distinctly indicated; the black of the breast replaced by a black maxillary line and streaked collar in the yellow of the upper part of the breast.

"Among adult males, scarcely two individuals exactly alike can be found. In some the black of the throat is continued in blotches down the middle of the breast, while in others it is restricted to a spot immediately under the head. These variations are not at all dependent upon any difference of habitat, for specimens from remote regions from each other may be found as nearly alike as any from the same locality." (*Hist. N. Am. B.*)

While some other birds are equally numerous, there are few that announce their presence as persistently as this species. All day long, in spring and summer, the males, sometimes to the number of a dozen or more for each meadow of considerable extent, perch

upon the summits of tall weed-stalks or fence-stakes, at short intervals crying out: "*See, see,—Dick, Dick-Cissel, Cissel;*" therefore "Dick Cissel" is well known to every farmer's boy as well as to all who visit the country during the season of clover-blooms and wild roses, when "Dame Nature" is in her most joyous mood.

Perhaps the prevalent popular name of this species is "Little Field Lark" or "Little Meadow Lark," a name suggested by his yellow breast and black jugular spot, which recall strongly the similar markings of the *Sturnella*, and also the fact that the two frequent similar localities. The name "Black-throated Bunting" is probably never heard except from those who have learned it from the books.

The location of the nest varies much with locality, though probably not more than in the case of many other species. At Mount Carmel, all that I found were in clover fields, and built upon or very close to the ground. In Richland county they were almost invariably built in small clumps of coarse weeds, at a height of about a foot above the ground. In Wisconsin, however, according to Dr. Brewer (*Hist. N. Am. B.* Vol. II., p. 68), Dr. P. R. Hoy, of Racine has never found a nest within one foot of the ground, some of them being as elevated as six feet. Of nineteen nests discovered by Dr. Hoy during one season, "ten were built in gooseberry bushes, four on thorn bushes, three among blackberry bushes, one on a raspberry bush, and one on a wild rose."

Family ICTERIDÆ.—The American Orioles.

"Char. Primaries nine. Tarsi scutellate anteriorly; plated behind. Bill long, generally equal to the head or longer, straight, or gently curved, conical, without any notch, the commissure bending downwards at an obtuse angle at the base. Gonys generally more than half the culmen, no bristles about the base of bill. Basal joint of the middle toe free on the inner side; united half-way on the outer. Tail rather long, rounded. Legs short." (*Hist. N. Am. B.*)

This family is one of those eminently characteristic of the New World, all the species being peculiar to America. It is of course most numerously represented within the Tropics.

Three "subfamilies" have been defined, but their limits are purely arbitrary, it being in some cases difficult to decide whether a species belongs to the genus *Icterus* or *Agelaius*, each typical, respectively, of the so-called "*Icterinæ*" and "*Agelainæ*." These artificial sections are thus defined in *History of North American Birds* (Vol. II., page 147:

Agelainæ. Bill shorter than, or about equal to, the head; thick, conical, both mandibles about equal in depth; the outlines all more or less straight, the bill not decurved at tip. Tail rather short, nearly even or slightly rounded. Legs longer than the head, adapted for walking; claws moderately curved.

Icterinæ. Bill rather slender, about as long as the head; either straight or decurved. Lower mandible less thick than the upper; the commissure not sinuated. Tarsi not longer than the head, nor than middle toe; legs adapted for perching. Claws much curved.

Quiscalinæ. Tail lengthened, considerably or excessively graduated. Bill as long as, or longer than, the head; the culmen curved towards the end, the tip bent down, the cutting edges inflexed, the commissure sinuated. Legs longer than the head, fitted for walking.

The North American genera may be thus arranged under their respective "subfamily" headings:

Subfamily Agelainæ.

A. Bill shorter than the head. Feathers of head and nostrils as in B.

1. **Dolichonyx.** Tail feathers with rigid stiffened acuminate points. Middle toe very long, exceeding the head.
2. **Molothrus.** Tail with the feathers simple; middle toe shorter than the tarsus or head.

B. Bill as long as the head. Feathers of crown soft. Nostrils covered by a scale which is directed more or less downwards.

3. **Agelaius.** First quill shorter than the second and third. Outer lateral claws scarcely reaching to the base of middle; claws moderate.
4. **Xanthocephalus.** First quill longest Outer lateral claw reaching nearly to the tip of the middle. Toes and claws all much elongated.

C. Bill as long as, or longer than, the head. Feathers of crown with the shafts prolonged into stiffened bristles. Nostrils covered by a scale which stands out more or less horizontally.

5. **Sturnella.** Tail feathers acute. Middle toe equal to the tarsus.

Subfamily Icterinæ.

6. **Icterus.** Bill slender, acute, sometimes slightly decurved, about as long as, or a little shorter than, the head. Nostrils as in *Agelaius*. Tail rounded or graduated about as long as, or slightly longer than, the wing.*

Subfamily Quiscalinæ.

7. **Scolecophagus.** Tail shorter than the wings; nearly even. Bill shorter than the head.
8. **Quiscalus.** Tail longer than the wings; much graduated. Bill as long as, or longer than, the head.

The three so-called subfamilies represent, superficially, three Old World families; viz.: The *Agelainæ* may be said to correspond to the Starlings (*Sturnidæ*), and have been called the American Starlings; the *Icterinæ* may likewise be compared with the Orioles (*Oriolidæ*), and in fact currently, though very improperly, bear the same name. For want of a more distinctive term, that of American Orioles is perhaps defensible, the name "Hang-nests," while very appropriate for the *Icterinæ*, lacking sufficiently exclusive pertinence to make it preferable. The *Quiscalinæ* are very appropriately called Crow-Blackbirds, but they have been termed Grakles by many authors, on account of a supposed resemblance to the true Grakles, or Minos, (*Graculidæ*) of Southern Asia.

Some of the *Agelainæ* (notably the genera *Dolichonyx* and *Molothrus*) present a very close resemblance to certain *Fringillidæ* in their general form, especially in the shortness and conical shape of the bill. They may, however, be readily separated by the family characters, as given on page 43.

All of the genera characterized in the above synopsis belong to the Illinois fauna, no others occurring in North America.

* Decidedly shorter than the wing in the subgenus *Yphantes*, to which the Baltimore and Bullock's Orioles (*I. galbula* and *I. bullocki*) belong.

Genus **DOLICHONYX** Swainson.

Dolichonyx Swainson, Zoöl. Journ. iii, 1827, 351. Type, *Emberiza oryzivora* Linn.

"Gen. Char. Bill, short, stout, conical, little more than half the head; the commissure slightly sinuated; the culmen nearly straight. Middle toe considerably longer than the tarsus (which is about as long as the head); the inner lateral toe longest, but not reaching the base of the middle claw. Wings long; first quill longer. Tail-feathers acuminately pointed at the tip, with the shaft stiffened and rigid, as in the Woodpeckers.

"The peculiar characteristic of this genus is found in the rigid acuminate tail-feathers and the very long middle toe, by means of which it is enabled to grasp the vertical stems of reeds or other slender plants." (*Hist. N. Am. B.*)

A peculiarity in the plumage of the only known species is that while the adult male in spring is deep black varied with buff nape and whitish scapulars and rump, this livery is changed at the end of the breeding season for a sober one of streaked yellowish, like that worn by the female throughout the year.

Dolichonyx oryzivorus (Linn.)

BOBOLINK.

Popular synonyms. Bob Lincoln; Skunk Blackbird (Northern States); Reed Bird, Ortolan (Atlantic coast in Autumn); Rice Bird (South Carolina and Georgia); Butter Bird (Jamaica).

Emberiza oryzivora Linn. S. N. ed. 10, i, 1758, 179; ed. 12, i, 1766, 311.—Wils. Am. Orn. ii, 1810, 48, pl. 12, figs. 1, 2.

Dolichonyx oryzivorus Swain's Zoöl. Jour. iii, 1827, 351.—Aud. Synop. 1839. 138; B. Am. iv, 1842. 10, pl. 211.—Baird, B. N. Am. 1858, 522; Cat. N. Am. B. 1859, No. 399.—Coues, Key, 1872, 154; Check List, 1874, No. 210; B. N. W. 1874, 178; 2d Check List, 1882, No. 312.—B. B. & R. Hist. N. Am. B. ii, 1874, 149, pl. 32, figs. 4, 5.—Ridgw. Nom. N. Am. B. 1881, No. 257.

Icterus agripennis Bonap. Obs. Wilson, 1824, No. 87.—Nutt. Man. i, 1832, 185.—Aud. Orn. Biog. i, 1831, 283; v. 1839, 486, pl. 54.

Hab. Eastern North America, north to the Saskatchewan (lat. 60°), west to or even beyond the Rocky Mountains (Ruby Valley, Nevada, and Salt Lake Valley, Utah, in September); in winter, south through Middle America, West Indies, and South America, to Bolivia, Argentine Republic, and Paraguay; Galapagos.

"Sp. Char. General color of *male* in spring, black; the nape, brownish cream-color; a patch on the side of the breast, the scapulars, and rump, white, shading into light ash on the upper tail-coverts and the back below the interscapular region. The outer primaries sharply margined with yellowish white; the tertials less abruptly; the tail-feathers margined at the tips with pale brownish ash. In autumn totally different, resembling the female.

"*Female*, yellowish beneath; two stripes on the top of the head, and the upper parts throughout, except the back of the neck and rump, and including all the wing feathers generally, dark brown, all edged with brownish yellow, which becomes whiter near the tips of the quills. The sides sparsely streaked with dark brown, and a similar stripe behind the eye. There is a superciliary and a median band of yellow on the head. Length of male, 7.70; wing, 3.83; tail, 3.15." (*Hist. N. Am. B.* vol. ii, 149.)

In *History of North American Birds* (Vol. II., pp. 150, 151), Dr. Brewer thus describes the habits and song of this species:

"In the earliest approaches of spring, in Louisiana, when small flocks of male Bobolinks made their first appearance, they are said by Mr. Audubon, to sing in concert; and their song thus given is at once exceedingly novel, interesting, and striking. Uttered with a volubility that even borders upon the burlesque and the ludicrous, the whole effect is greatly heightened by the singular and striking manner in which first one singer and then another, one following the other, until all have joined their voices, take up the note and strike in, after the leader has set the example and given the signal. In this manner sometimes a party of thirty or forty Bobolinks will begin, one after the other, until the whole unite in producing an extraordinary medley, to which no pen can do justice, but which is described as very pleasant to listen to. All at once the music ceases with a suddenness not less striking and extraordinary. These concerts are repeated from time to time, usually as often as the flock alights. * * * In New England the Bobolink treats us to no such concerts as those described by Audubon, where many voices join in creating their peculiar, jingling melody. When they first appear, usually after the middle of May, they are in small parties, composed of either sex, absorbed in their courtships and overflowing with song. When two or three male Bobolinks, decked out in their gayest spring apparel, are paying their attentions to the same drab-colored female, contrasting so strikingly in her sober brown dress, their performances are quite entertaining, each male endeavoring to out-sing the other. The female appears coy and retiring, keeping closely to the ground, but always attended by the several aspirants for her affection. After a contest, often quite exciting, the rivalries are adjusted, the rejected suitors are driven off by their more fortunate competitor, and the happy pair begin to put in order a new home. It is in their love-quarrels that their song appears to the greatest advantage. They pour out incessantly their strains of quaint but charming music, now on the ground, now on the wing, now on the top of a fence, a low bush, or the swaying stalk of a plant that bends with their weight. The great length of their song, the immense number of short and variable notes of which it is composed, the volubility and confused rapidity with which they are poured forth, the eccentric breaks, in the midst of which we detect the words "bob-o-link" so distinctly enunciated, unite to form a

general result to which we can find no parallel in any of the musical performances of our other song-birds. It is at once a unique and a charming production. Nuttall speaks of their song as monotonous, which is neither true nor consistent with his own description of it. To other ears they seem ever wonderfully full of variety, pathos and beauty.

"The young, in due time, assume the development of mature birds, and all wear the sober plumage of the mother. And now there also appears a surprising change in the appearance of our gayly attired musician. His showy plumage of contrasting white and black, so conspicuous and striking, changes with almost instant rapidity into brown and drab, until he is no longer distinguishable, either by plumage or note, from his mate or young."

One would suppose that the terrible slaughter carried into the ranks of this species during its autumnal migration would materially diminish its numbers. That this has been the result is a fact which has been noted by many persons resident in those portions of the country where the Bobolink is a familiar summer sojourner.

The Bobolink breeds only in the northern part of Illinois, where, according to Mr. Coale, it is an abundant summer resident. In the middle and southern portions of the State it is transient only, merely passing hurriedly through in spring and fall, but so different in plumage and habits during the two seasons that probably few persons suspect their being the same bird.

Genus **MOLOTHRUS** Swainson.

Molothrus Swainson, F. Bor.-Am. ii, 1831, 277. Type, *Fringilla pecoris* Gm.,=*Oriolus ater* Bodd.

"Gen. Char. Bill short, stout, about two thirds the length of head; the commissure straight, culmen and gonys slightly curved, convex, the former broad, rounded, convex, and running back on the head in a point. Lateral toes nearly equal, reaching the base of the middle one, which is shorter than the tarsus; claws rather small. Tail nearly even; wings long, pointed, the first quill longest. As far as known, the species make no nest, but deposit the eggs in the nests of other, usually smaller, birds.

"The genus *Molothrus* has the bill intermediate between *Dolichonyx* and *Agelaius*. It has the culmen unusually broad between the nostrils, and it extends back some distance into the forehead. The difference in the structure of the feet from *Dolichonyx* is very great.

"Species of *Molothrus* resemble some of the *Fringillidæ* more than most of the typical *Icteridæ*. The bill is, however, different, the tip

being without notch; the culmen running back farther on the forehead, the nostrils being situated fully one third or more of the total length from its posterior extremity. The entire absence of notch in the bill and of bristles along the rictus are strong features. The nostrils are perfectly free from any overhanging feathers or bristles. The pointed wings, with the first quill longest, or nearly equal to second, and the tail with its broad rounded feathers, shorter than the wings, are additional features to be specially noted. (*Hist. N. Am. B.*)

Molothrus ater (Bodd.)

COWBIRD.

Popular synonyms. Cow Blackbird; Cow-pen Bunting; Lazy Bird (Connecticut); Clodhopper.

Oriolus ater BODD. Tabl. P. E. 1783. 37.

Molothrus ater GRAY, 1870.—Ridgw. Nom. N. Am. B. 1881, No. 258.—COUES, 2d Check List, No. 313.

Frin illa pecoris GMEL. S. N. i, 1788, 910 (female).

Emberiza pecoris WILS. Am. Orn. ii, 1810, 145, pl. 18, figs. 1, 2, 3.

Icterus pecoris Bp. 1824.—NUTT. Man. i, 1832, 178.—AUD. Orn. Biog. i, 1831, 493; v, 1839, 233, 400, pls. 99, 424.

Molothrus pecoris SW. & RICH. F. B. A. ii, 1831, 277.—AUD. Synop. 1839, 139; B. Am. iv, 1842, 16. pl. 212.—BAIRD. B. N. Am. 1858, 524; Cat. N. Am. B. 1859, No. 400.—COUES, Key, 1872, 155; Check List 1874, No, 211; B. N. W. 1874, 180.—B. B. & R. Hist. N. Am. B. ii, 1874, 154. pl. 32. figs. 6, 7.

Fringilla ambigua NUTT. Man. i, 1832, 484 (= young).

HAB. Temperate North America (except Pacific Coast?), north to about 68°; breeds chiefly north of 35°, and winters mainly south of the same parallel, down to southern border of the United States.

"SP. CHAR. Second quill longest; first scarcely shorter. Tail nearly even, or very slightly rounded. Male with the head, neck, and anterior half of the breast light chocolate brown, rather lighter above; rest of body lustrous black, with a violet-purple gloss next to the brown, of steel-blue on the back, and of green elsewhere. Female light olivaceous brown all over, lighter on the head and beneath. Bill and feet black. Length, 8 inches; wing, 4.42; tail, 3.40.

"The young bird of the year is brown above, brownish white beneath: the throat immaculate. A maxillary stripe and obscure streaks thickly crowded across the whole breast and sides. There is a faint indication of a paler superciliary stripe. The feathers of the upper parts are all margined with paler. There are also indications of light bands on the wings. These markings are all obscure, but perfectly appreciable, and their existence in adult birds of any species may be considered as embryonic, and showing an inferiority in degree to the species with the under parts perfectly plain." (*Hist. N. Am. B.*)

The Cowbird is a common species throughout the State. It is resident southward, but only a summer sojourner in the northern portions. It is at all seasons gregarious, associating in small flocks, which follow the furrow made by the ploughman or keep company with the cattle, often alighting upon their backs. The Cowbird builds no nest, but lays its eggs surreptitiously in the nests of other birds. In this it evinces no preference, except that a species smaller than itself is usually selected, and never one very much its superior in size; usually a very much smaller bird is thus imposed on. It makes no attempt, however, to select a species whose eggs more or less resemble its own, but drops its eggs indiscriminately in nests whose owners lay white eggs, plain blue eggs, or speckled eggs. The number of these parasitic eggs which may be found in one nest varies from one to five, and it may be that, in some cases at least, all are deposited by one bird, although it is equally probable that sometimes the eggs of two or more individuals are dropped in the same nest. It is interesting to watch the female when she is searching for a nest in which to deposit the egg she is about to lay. She hunts stealthily through the woods, usually among the undergrowth, and when a nest is discovered, patiently awaits from a convenient hiding place the temporary absence of the parent, when the nest is stealthily and hastily inspected, and if found suitable she takes possession and deposits her egg, when she departs as quietly as she came. The male Cowbird is polygamous, and becomes quite amorous during the breeding season, parading before the females with spread wings and tail, now and then swelling up until he seems ready to burst; but the looked-for catastrophe is prevented by the emission of a ridiculous squeaking song, when he subsides to his original proportions.

Genus **XANTHOCEPHALUS** Bonaparte.

Xanthocephalus Bonap. Conspectus, i, 1850, 431. Type, *Icterus icterocephalus* Bonap.

"Gen. Char. Bill conical, the length about twice the height; the outlines nearly straight. Claws all very long; much curved; the inner lateral the longest, reaching beyond the middle of the middle claw. Tail narrow, nearly even, the outer web scarcely widening to the end. Wings long, much longer than the tail; the first quill longest." (*Hist. N. Am. B.*)

This genus differs from *Agelaius* in much longer and more curved claws, and in having first or second quill longest, instead of the longest being the second, third, or fourth.

There is even a greater discrepancy in size between the sexes, the female being scarcely more than half the bulk of the male. The latter is black, with the head, neck, and jugulum yellow.

Xanthocephalus xanthocephalus (Bonap.)

YELLOW-HEADED BLACKBIRD.

Icterus xanthocephalus Bp. Jour. Phil. Ac. v, 1826, 222.—Aud. Biog. v. 1839, 6, pl. 388.
Agelaius xanthocephalus Sw. & Rich, F. B.-A. ii, 1831, 281.—Aud. Synop. 1839, 240; B. Am. iv, 1842, 24, pl. 213.
Agelaius longipes Sw. Philo. Mag. i, 1827, 436.
Icterus perspicillatus Wagl. Isis, 1829, 758.
Icterus icterocephalus Bp. Am. Orn. i, 1835, 27, pl. 3.—Nutt. Man. i, 1832, 176; 2d ed. 1840, 187.
Xanthocephalus icterocephalus Baird, B. N. Am. 1858, 531; Cat. N. Am. B. 1859, No. 404.—Coues, Key 1872, 156; Check List, 1874, No. 213; 2d ed. 1882, No. 319; B. N. W. 1874, 188.—B. B. & R. Hist. N. Am. B. ii, 1874, 167, pl. 32, fig. 9. pl. 33, fig. 9.—Ridgw. Nom. N. Am. B. 1881, No. 260.

Hab. Western North America, regularly to Wisconsin, Illinois, Kansas, etc., (casually) to Massachusetts, Pennsylvania, Florida and Cuba, north to the Saskatchewan, and south into Mexico. Accidental in Greenland.

Sp. Char. *Adult male in summer.* Head, neck, and jugulum yellow, varying from a lemon to a rich orange shade—very rarely to a pinkish saffron hue; primary coverts and lower greater wing-coverts white; rest of plumage uniform dull black, the lower portion of the tibiæ and the feathers immediately surrounding the anus yellow; lores, eyelids and feathers bordering the base of the bill, also black. *Adult male in winter.* Similar, but top of the head and nape washed with dusky. Total length about 10⅝–11⅛ inches; extent 17–18¼; wing 5.65–5.80; tail 4.50–4.85; culmen .90; tarsus 1.30; middle toe 1.05. *Adult emale.* Brownish dusky, the throat and jugulum dull yellow, the middle of the breast mixed with whitish. Total length about 9 inches; extent 14½; wing 4.40–4.65; tail 4.50–4.70. *Young male in first winter.* Similar to the adult *female*, but larger and deeper colored. *Young, first plumage.* General color light isabella-brown, or dull brownish buff, the wings and tail dusky.

The Yellow-headed Blackbird appears to be confined to the prairie districts of the northern portion of the State; at least there seems to be no record of its occurrence elsewhere. The writer thought he once heard its note at Mt. Carmel, but was unable to discover the bird, and may have been mistaken; and he was never able to find it on the prairies of Richland county, in marshy situation where the Red-wings were abundant. In Cook county, Mr. Nelson says (page 111 of his list) that it is a "very common resident in large marshes. Arrives the first of May. Commences nesting the last of this month. Owing to the restricted localities inhabited by this bird, it is very slightly known among farmers; even those living next the marshes, generally think it an uncommon bird. My observations regarding the actions of the males during incubation do not agree with those of Dr. Coues ("Birds of the Northwest," p. 190). The only difference between the habits of the male and female is the slightly

additional shyness of the former. Their nests vary endlessly in size, from four to twelve inches in depth, although the latter size is rather uncommon."

Mr. Coale informs me that colonies nest in rushes in the Calumet marshes, that they are bold and interesting, and that he has seen adults on the ground along country roads, some distance from water.

Genus **AGELAIUS** Vieillot.

Agelaius Vieillot, Analyse, 1816, 33. Type, *Oriolus phœniceus* Linn.

"Gen. Char. First quill shorter than second; claws short; the outer lateral scarcely reaching the base of the middle. Culmen depressed at base, parting the frontal feathers; length equal to that of the head, shorter than tarsus. Both mandibles of equal thickness and acute at tip, the edges much curved, the culmen, gonys, and commissure nearly straight or slightly sinuated; the length of bill about twice its height. Tail moderate, rounded, or very slightly graduated. Wings pointed, reaching to end of lower tail-coverts. Colors black with red shoulders in North American species. One West Indian with orange-buff. Females streaked except in two West Indian species.

"The nostrils are small, oblong, overhung by a membranous scale. The bill is higher than broad at the base. There is no division between the anterior tarsal scutellæ and the single plate on the outside of the tarsus." (*Hist. N. Am. B.*)

This genus is represented in eastern North America by a single species, the common Red-winged Blackbird (*A phœniceus*).

Agelaius phœniceus (Linn.)

RED-WINGED BLACKBIRD.

Popular synonyms. Red-winged Starling or Blackbird; Red-and-buff-shouldered Blackbird; Red-shouldered Blackbird; Swamp Blackbird.

Oriolus phœniceus Linn. S. N. ed. 12, i, 1766, 161.

Agelaius phœniceus Vieill. Analyse, 1816.—Aud. Synop. 1839, 141; B. Am. iv, 1842, 31, 216.—Baird, B. N. Am. 1858, 526; Cat. N. Am. B. 1859, No. 401.—Coues, Key, 1872, 156; Check List, 1874, No. 212; 2d ed. 1882, No. 316; B. N. W. 1874, 186, (part).—B. B. & R. Hist. N. Am. B. ii, 1874, 159 pl. 33, figs. 1, 2, 3.—Ridgw. Nom. N. Am. B. 1881, No. 261.

Icterus phœniceus "Daud." Licht. 1823.—Nutt. Man. i, 1832, 169.—Aud. Orn. Biog. i, 1831, 348; v, 1839, 487, pl. 67.

Sturnus predatorius Wils. Am. Orn. iv, 1811, 30, pl. 30, fig. 1.

Hab. Temperate North America, more rare on Pacific coast, where represented by an allied species *A. gubernator* Wagl.; north to the "Fur Countries," south, in winter to Costa Rica, but wintering, more or less regularly, north to 35° or further. Bahamas, but not in Cuba, where represented by *A. assimilis*. Accidental in England.

Sp. Char. *Adult male.* Uniform deep black, the lesser wing-coverts brilliant scarlet, the middle wing-coverts buff or ochraceous. Bill and feet deep black, iris brown. Total length (fresh), about 9.00–9.50 inches; extent, 14.50–15.75. *Adult female.* Above dusky grayish brown, the feathers narrowly edged with light grayish, rusty, etc.; beneath

white, broadly streaked with dusky, the chin, and throat, sometimes sides of head also, usually more or less tinged with buff or pink. Lesser wing-coverts sometimes dark brown red. Total length (fresh), 7.45–8.25; extent, 12.15–13.00. "*First plumage*, female. Above dark seal-brown; every feather of the crown, nape and interscapular region, with the greater and middle wing-coverts, primaries, secondaries, and tertiaries, edged and tipped with brownish fulvous. Beneath light yellowish-brown, thickly and broadly streaked everywhere with dull black. Sides of throat and head, including a considerable space around the eye, bare skin (of a brownish orange color in the dried specimen), with a few scattering pin-feathers. (From a specimen in my collection obtained at Cambridge, Mass., June 24, 1872.) Males in first plumage, before me, differ but little from the individual above described. All have the bare spaces on the sides of the throat, although these are feathered before the first moult is begun. A male in transitional dress (collected at Ipswich, Mass., July 15, 1874), with the head fully feathered, has the throat dull brownish yellow, with a strong tinge of the same color on the breast. The wing and tail-feathers are renewed during the first moult.

"*Autumnal plumage:* young male. Crown dark brown, with a faint rusty edging upon each feather; nape brownish yellow, with a rusty tinge, finely spotted with a dark brown; interscapular region, and a broad outer edging upon the secondaries and tertiaries, deep dull reddish-brown, each feather having a broad V-shaped mark of dull black. Rump glossy black, every feather edged with fulvous ashy; shoulder dull red with black spotting; middle coverts fulvous; greater coverts tipped with the same color. Superciliary stripe brownish yellow. A space anterior to and beneath the eye dusky black. Entire under parts black, each feather upon the abdomen edged broadly with pale ashy, elsewhere with yellowish brown. The light edging of the feathers gives the under parts a conspicuously scutellate appearance. (From a specimen in my collection taken at Cambridge, Mass., October 6, 1776.) This plumage (although not to my knowledge previously described by writers) is the characteristic one of the young in autumn. I am unable to state if the adult male retains his uniform black coloring at all seasons. A remarkable variation from the typical plumage is afforded by a fine adult male in my cabinet, which has a broad crescentic patch of pale yellow tinged with rose-color upon the breast. Nor is this specimen unique, for I have seen several others with a similar but less conspicuous mark. It probably represents an exceptionally high condition or phase of ornamentation, like the commoner one of scarlet or yellow wing-markings, in the Scarlet Tanager (*Pyranga rubra*). Very old females of *A. phœniceus* have the throat a delicate peach-color; illustrated by several specimens in my cabinet from Nantucket and Ipswitch, Mass." (BREWSTER, *Bull. Nutt. Orn. Club*, Oct., 1878, p. 175.)

The common Red-winged Blackbird is one of our most abundant and best known birds. Every marsh and open swamp is inhabited by numbers in the spring and summer, while in autumn they collect in large flocks, sometimes of such extent as to cause serious damage to the farmer's grain stacks. In the extreme southern portion of the State they sometimes winter, congregating in large flocks, from which they daily sally forth to forage over the surrounding country. Even during the spring and summer the Redwings are gregarious, for they breed in communities, hundreds of pairs sometimes nesting in one marsh. The males are polygamous, each having under his protection from two to three or four demure looking females, hardly half his size, and dressed in homely garb, who attend quietly and assiduously to their domestic duties, while their lord and master

mounts guard upon some prominent perch near by, and cheers them with his song. This song, while in a measure harsh, has yet a peculiar metallic resonance which renders it not unpleasant; and when the songs of many individuals are blended the resulting chorus is decidedly musical. The normal, or usual, song sounds like *con'-cur-ee'*, but there are many variations from this modulation. When singing, the male bends forward his body, swells his plumage, and by some peculiar adjustment of the wings brings his scarlet epaulettes into striking prominence; and when he sallies from his perch to make the regular round of inspection over his harem these splendid decorations flash forth with rich brilliancy, no doubt to the admiration of the faithful creatures for whom the display is intended.

The nest of the Red-winged Blackbird is very variously situated, but it is always in or in very close proximity to a swamp or marsh. It is placed either among rank grasses or sedges, rushes, or other marsh plants, or in bushes growing in the water; and on one occasion the writer found a colony which had built their nests in "sage bushes" (*Artemisia tridentata*) growing in and about a shallow alkaline pond, on Antelope Island, in the Great Salt Lake. The most noteworthy departure from the usual situation, however, known to the author, was that of a nest built in a small elm tree standing in the middle of a moderately dry meadow, and placed at a height of about fifteen feet from the ground.

Genus **STURNELLA** Vieillot.

Sturnella Vieillot, Analyse, 1816, 34. Type, *Alauda magna* Linn.

"Gen. Char. Body thick, stout; legs large, toes reaching beyond the tail. Tail short, even, with narrow acuminate feathers. Bill slender, elongated; length about three times the height; commissure straight from the basal angle. Culmen flattened basally, extending backwards and parting the frontal feathers; longer than the head, but shorter than tarsus. Nostrils linear, covered by an incumbent membranous scale. Inner lateral toe longer than the outer, but not reaching to basal joint of middle, which is equal to the tarsus. Hind claw nearly twice as long as the middle. Feathers of head stiffened and bristly; the shafts of those above extended into a black seta. Tertials nearly equal to the primaries. Feathers above all transversely banded. Beneath yellow, with a black pectoral crescent." (*Hist. N. Am. B.*)

Two quite distinct though very similar species of *Sturnella* are found in Illinois, one of them belonging exclusively to the eastern and the other to the western portions of the United States, but occurring together in the prairie districts of the Mississippi Valley, especially west of the Mississippi River.

These may be distinguished by the following characters:

1. **S. magna.** Yellow of throat confined strictly between the maxillæ. Lateral stripes of the crown with black predominating; upper parts with much black, and with the dark bars of the tertials and middle tail-feathers usually connected along the middle line of the feathers. *Hab.* Eastern United States to the border of the Great Plains.

2. **S. neglecta.** Yellow of the throat extending over the maxillæ nearly or quite to the angle of the mouth. Lateral crown stripes streaked with black and grayish in nearly equal amount; upper parts with less black, the dark bars of the tertials and middle tail-feathers not connected. *Hab.* Western United States and western Mexico, east to the prairie districts of the Mississippi Valley.

It is sometimes rather difficult to distinguish specimens of these two species; but the most casual observer of birds may readily distinguish them in life by their totally different notes—probably no two species of any genus of birds being more distinct in this respect.

Sturnella magna (Linn.)

MEADOWLARK.

Popular synonyms. Fieldlark; Old Field Lark.

Alauda magna Linn. S. N. ed. 10, i, 1758, 167.—Wils. Am. Orn. iii, 1811, 20, pl. 19.

Sturnella magna Baird, B. N. Am. 1858, 535; Cat. N. Am. B. 1859, No. 406.—Coues, Key, 1872, 157; 2d ed. 1884, 406; Check List, 1874, No. 214; 2d ed. 1882, No. 320; B. N. W. 1874, 190 (part).—B. B. & R. Hist. N. Am. B. ii, 1874, 174, pl. 34, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 263.

Sturnus ludovicianus Linn. S. N. ed. 12, i, 1766, 290.—Nutt. Man. i, 1832, 147.—Aud. Orn. Biog. ii, 1834, 216; v, 1839, 492, pl. 136.

Sturnella ludoviciana Sw. 1831.—Aud. Synop. 1839, 148; B. Am. iv, 1842, 70, pl. 223.

Hab. Eastern United States and British Provinces (north to about 53° in the interior), west to the edge of the Great Plains; winters chiefly south of 38°. Accidental in England.

"Sp. Char. The feathers above dark brown, margined with brownish white, and with a terminal blotch of pale reddish brown. Exposed portions of wings and tail with dark brown bars, which on the middle tail-feathers are confluent along the shaft. Beneath yellow, with a black pectoral crescent, the yellow not extending on the side of the maxilla; sides, crissum, and tibiæ pale reddish brown, streaked with blackish. A light median and superciliary stripe, the latter yellow anterior to the eye; a black line behind. *Female* smaller and duller. *Young* with pectoral crescent replaced by streaks; the yellow of under surface replaced more or less by ochraceous or pale fulvous. Length, 10.60; wing, 5.00; tail, 3.70; bill above, 1.35." (*Hist. N. Am. B.*)

Adult male. Wing, 4.50–5.00; tail, 3.50–3.85; culmen, 1.20–1.50; bill from nostril, .75–.95; tarsus, 1.35–1.60; middle toe, 1.10–1.30.

Adult female. Wing about 4.20, tail 3.00.

Four adult males from Mount Carmel measured, when fresh, as follows: Total length, 9.75–10.50; extent, 15.00–15.75.

In a work whose acknowledged aim is to give information to the interested reader, it seems almost presumptuous on the part of the author to offer any remarks on the habits of so well-known a bird

as the common Meadowlark; for perhaps the majority of those who may read this book are as familiar with this bird as the author, and doubtless many are even more intimately acquainted with him. Suffice it to say, therefore, that while not one single charge has been laid at his door, so far as the author is aware, the Meadowlark is a very general favorite among lovers of birds, on account of his pleasing song, bright plumage, and pretty ways. His sweet, tender song is one of the finest to be heard in our rural districts, and is characterized by a delicacy of tone remarkable in a large bird. It is usually interpreted by the country folks as intimating that "*laziness will kill you*" (accent on the penultimate syllable), while others imagine it to say: *peek—you can't see me*,—a very appropriate translation, we think, in the case of a bird which, like the present, plays at "hide and seek" with us in the meadows. *Apropos* of the song of this bird, it has been said that on the prairies of Illinois a decided change from the song of the bird of the Atlantic States may be noticed, the variation being in the direction of the more powerful, melodious, and varied song of *S. neglecta*. But the writer has been unable to detect the slightest difference, and his experience is similar to that of others who have had the opportunity to compare the songs of meadowlarks in the two regions. *S. neglecta* itself occurs more or less plentifully on the prairies of the northern, central, and western portions of the State; and as this bird varies greatly in the character of its song with different individuals (though it is always very distinct from that of *S. magna*), it is probable that the author to whose statement we have referred heard in reality inferior songsters (probably younger birds) of the western species, and not *S. magna*.

Sturnella neglecta (Aud.)

WESTERN MEADOWLARK.

Popular synonym. Western Fieldlark.

Sturnella neglecta AUD. B. Am. vii, 1843, 339, pl. 487.—BAIRD, B. N. Am. 1858, 537; Cat. N. Am. B. 1859, No. 407.—RIDGW. Nom. N. Am. B. 1881, No. 264.

Sturnella magna var. *neglecta* COUES, Key, 1872, 187; Check List, 1874, No. 214*a*.—B. B. & R. Hist. N. Am. B. ii, 1874, 176, pl. 34, fig. 1.

Sturnella magna, b. *neglecta* COUES, B. N. W. 1874, 190.

Sturnella magna neglecta COUES, 2d Check List, 1882, No. 322.

HAB. Western United States, east to the prairie districts of the Mississippi Valley, as far as central and northern Illinois, Wisconsin, Iowa, etc.; south to western Texas and western Mexico, as far as Colima.

"SP. CHAR. Feathers above dark brown, margined with brownish white, with a terminal blotch of pale, reddish brown. Exposed portions of wings and tail with transverse bands, which, in the latter, are completely isolated from each other, narrow and linear. Beneath yellow, with a black pectoral crescent. The yellow of the throat extending on the sides of the maxilla. Sides, crissum, and tibiæ very pale reddish brown, or nearly white, streaked with blackish. Head with a light median and superciliary stripe, the latter yellow in front of the eye; a blackish line behind it. The transverse bars on the feathers above (less so on the tail) with a tendency to become confluent near the exterior margin. Length, 10 inches; wing, 5.25; tail, 3.25; bill, 1.25." (*Hist. N. Am. B.*)

Adult male. Wing, 4.40–5.10; tail, 3.30–3.50; culmen, 1.18–1.40; bill, from nostril, .85–.90; tarsus, 1.30–1.45; middle toe, 1.10–1.15.

Adult female. Wing, 4.35–4.45; tail, 3.05–3.10; bill, from nostril, .80–.85; tarsus, 1.25–1.35; middle toe, 1.05–1.10.

Adult males shot by the writer in Nevada, measured, when fresh, as follows: Total length, 9.75–10.25; extent, 16.00–17.00; maxilla and tip of mandible, black; basal two thirds of the mandible, and posterior three fourths of the maxillary tomium, pure pale blue; iris, brown; legs and feet uniform, delicate, pale, ashy lilaceous.

According to Mr. E. W. Nelson (*Bull. Essex Inst.* Vol. VIII., 1876, p. iii), the Western Meadowlark is "a regular but rather rare summer resident upon prairies" in the northeastern portion of the State, and he conjectures that it "is probably a common summer resident upon the prairies in the western portion." He records "a fine specimen" in the collection of Mr. A. W. Brayton, "taken near Chicago the last of May, 1876," and among Mr. H. K. Coale's notes I find an entry reading "Englewood, May, 1876," which, however, may possibly refer to the same specimen. On the prairies of Richland county I have, on a few occasions, heard its unmistakable song, but have never been able to obtain a specimen.

GENUS **ICTERUS** BRISSON.

Icterus BRISS. Orn. ii, 1760, 85. Type (by elimination), *Oriolus icterus* LINN.
Pendulinus VIEILL. Analyse, 1816, 13. Type, *Oriolus spurius* LINN.
Yphantes VIEILL. Analyse, 1816, 33. Type, *Oriolus baltimore* LINN. (*Coracias galbula*) LINN.

"GEN. CHAR. Bill slender, elongated, as long as the head, generally a little decurved, and very acute. Tarsi not longer than the middle toe, nor than the head; claws short, much curved; outer lateral toe a little longer than the inner, reaching a little beyond base of middle toe. Feet adapted for perching. Tail rounded or graduated. Prevailing colors yellow or orange, and black." (*Hist. N. Am. B.*)

The two species occurring within the field of this work belong to two rather distinct subgenera, which may be defined as follows:

1. **Yphantes.** Bill rather stout, conical, the outlines very straight; tail slightly rounded, much shorter than the wing.
2. **Pendulinus.** Bill slender, decurved at the tip; tail graduated, about as long as the wing.

The species (including a western one, which may reasonably be expected to occur as a straggler) are characterized as follows:

A. Tail much shorter than the wing, nearly even; bill with with straight outlines. *Males* orange and black, the *females* much duller. (Subgenus *Yphantes.*)

1. **I. galbula.** *Adult male.* Head and neck all round, back, wings, and part of tail, deep black, the wing-feathers edged with white; rest of plumage usually rich cadmium-orange, but varying from yellowish orange to intense reddish orange. *Adult female.* Above olive, usually more or less mixed with blackish; beneath dull orange, the throat usually mixed with black (whole head and neck sometimes broken blackish); tail yellowish olive. *Young* like the adult female, but without black on throat.

2. **I. bullocki.** *Adult male.* Crown, nape, back, wings, and part of tail, deep black; a narrow stripe through the eye and a broad one on the throat, also black; a large white patch covering greater wing-coverts; rump dull orange; superciliary stripe, with lower parts orange, varying from Indian-yellow to a rich reddish cadmium hue. *Adult female* and *young male in second year.* Above brownish gray the back usually spotted with blackish; beneath brownish white, yellowish anteriorly—sometimes wholly yellowish—the throat often with more or less of an indication of a dusky stripe; tail yellowish olive.

B. Tail about equal to the wings, graduated; bill slender, decurved at the tip. *Adult male*; chestnut and black. (Subgenus *Pendulinus.*)

3. **I. spurius.** *Adult male.* Head, neck, jugulum, back, wings and tail, deep black; rump, lesser and middle wing-coverts, and lower parts, rich chestnut. *Adult female.* Above olive-green, beneath greenish yellow. *Young male in second year.* Similar to adult *female*, but throat black. *Young, first plumage.* Much like the adult *female.*

Icterus galbula (Linn.)

BALTIMORE ORIOLE.

Popular synonyms. Hanging Bird; Hang-nest; Golden Oriole; Golden Robin; English Robin; Fire Bird; Pea Bird.

Coracias galbula Linn. S. N. ed. 10, i, 1758, 107.

Icterus galbula Coues, Bull. Nutt. Orn. Club, v, 1880, 98; 2d Check List, 1882, No. 326; 2d Key, 1884, 408.—Ridgw. Nom. N. Am. B. 1881, No. 271.

Oriolus baltimore Linn. S. N. ed. 12, i, 1866, 162.—Wils. Am. Orn. i, 1808, 23, pl. 1, fig. 3; vi, 88, pl. 53, fig. 4.

Icterus baltimore Daud. 1800.—Nutt. Man. i, 1832, 152.—Aud. Orn. Biog. i, 1831, 66; v, 1839, 278, pls. 12, 423; Synop. 1839, 143; B. Am. iv, 1842, 37, pl. 217.—Baird, B. N. Am. 1858, 548; Cat. N. Am. B. 1859, No. 415.—Coues, Key, 1872, 158; Check List, 1874, No. 216; B. N. W. 1874, 193.—B. B. & R. Hist. N. Am. B. ii, 1874, 195, pl. 35, fig. 5.

Hab. Temperate eastern North America, west to the eastern base of the Rocky Mountains, breeding chiefly north of 35°. In winter, eastern Mexico and Central America to Colombia; Cuba.

Sp. Char. *Adult male.* Head and neck all round, jugulum (especially the median portion), back, wings, two middle tail-feathers, and middle portion of other rectrices, deep black. Lesser wing-coverts, rump, lower parts, and greater portion of tail, rich pure cadmium-orange. Feathers of wings edged with white. Bill fine light blue, the upper half of the maxilla black; iris brown; legs and feet plumbeous blue. *Adult female.* Above olive, mixed with dull greenish orange, the crown more or less mixed with black, and the back inclining to gray. Wings dusky, with two white bands. Tail golden olive. Lower parts dull orange, the abdomen inclining to whitish. Throat usually mixed with black. *Young.* Similar to the adult female, but without any black about head. Wing, 3.55–3.80; tail, 3.10–3.35; bill, from nostril, .48–.50.

The plumage of the female varies much more than that of the male. Occasionally there is almost as much black (excepting on the tail) as in the male, but it is much duller and more or less broken.

A young bird is soft, dull orange beneath, palest on the throat, and tinged along the sides with olive; above olive, with an orange cast on the rump and tail, the latter being without any black; centres of dorsal feathers blackish; wings blackish, with two broad white bands across coverts, and broad edges of white to the tertials.

Excepting only the Scarlet Tanager, the Baltimore Oriole is the most brilliant of our birds; and it is also one of the most attractive on account of the melody of its voice and the familiarity of its habits. It is a more or less common summer resident throughout the State, arriving, in the southern portion, during the third week in April and remaining till the latter part of September.

"The Baltimore Oriole," writes Dr. Brewer,* "is one of the most common birds nearly throughout New England. Gay and brilliant in plumage, interesting and lively in manners and habits, and a vocalist of rare power, with pathos, beauty, and variety in his notes, the bird has been, and would still be, a great favorite, but for its transgressions among the pea-vines of our gardens. He makes his appearance with exemplary punctuality, seeming regardless of the prematureness or tardiness of the season. Rarely does the 10th of May pass without the sound of his welcome notes, and rarely, if ever does he come sooner.

"Their period of song is not a long one, but soon terminates, as family cares increase and the tender broods require an undivided attention. Early in July this Oriole ceases to favor the world with those remarkable notes that seldom fail to attract attention by their peculiarity, and to excite admiration by their rich and full-toned melody."

Icterus spurius (Linn.)

ORCHARD ORIOLE.

Popular synonyms. Brown Oriole; Chestnut-colored Oriole.

Orioles spurius Linn. S. N. ed. 12, i, 1766, 162.

Icterus spurius Bp. 1827.—Nutt. Man. i, 1832, 165.—Aud. Orn. Biog. i, 1831, 221; v, 1839, 485, pl. 42; Synop. 1839, 144; B. Am. iv, 1842, 46, pl. 219.—Baird, B. N. Am. 1858, 547; Cat. N. Am. B. 1859. No. 414.—Coues, Key, 1872, 158; 2d ed. 1884, 407; Check List, 1873, No. 213; 2d ed. 1882, No. 324; B. N. W. 1874, 192.—B. B. & R. Hist. N. Am. B. ii, 1874, 190, pl. 34, figs. 4, 5, 6.—Ridgw. Nom. N. Am. B. 1881, No. 270.

* *Hist. N. Am. B.*, vol. ii, p. 197.

Oriolus mutatus WILS. Am. Orn. 1, 1808, pl. 4, figs. 1-4.
Xanthornus affinis LAWR. Ann. Lyc. N. Y. v, 1851, 113.
Icterus spurius var. *affinis* COUES, Key, 1872, 158.
Icterus spurius b *affinis* COUES, B. N. W. 1874, 193.

HAB. Eastern United States, west to the edge of the Great Plains (occasionally to the Rocky Mountains), north, rarely, to Canada, breeding as far south as the Rio Grande. In winter, south through eastern Mexico and Central America (both sides) to Colombia; Cuba.

"SP. CHAR. Bill slender, attenuated, considerably decurved; tail moderately graduated. *Male*, three years. Head and neck all round, wings, and interscapular region of back, with tail-feathers, black. Rest of under parts, lower part of back to tail, and lesser upper wing-coverts, with the lower ones, brownish chestnut. A narrow line across the wing, and the extreme outer edges of quills, white. *Female*. Uniform greenish yellow beneath, olivaceous above, and browner in the middle of the back; two white bands on the wings. Young male of two years like the female, but with a broad black patch from the bill to the upper part of the breast, this color extending along the base of the bill so as to involve the eye and all anterior to it to the base of the bill, somewhat as in *I. cucullatus*. Length of Pennsylvania male specimen, 7.25; wing, 3.25." (*Hist. N. Am. B.*)

In the southern half, at least, of Illinois the Orchard Oriole is far more numerous than the Baltimore; and though much less splendid in coloring is still a handsome bird, besides being an excellent songster, his notes having an ecstatic character quite the reverse of the mournful lament of his larger and more brilliantly colored cousin. The more prominent characteristics of the species are thus described by Dr. Brewer:

"The Orchard Oriole is an active, sprightly, and very lively species, and possesses a very peculiar and somewhat remarkable song. Its notes are very rapidly enunciated, and are both hurried and energetic. Some writers speak of the song as confused, but this attribute is not in the utterance of the song, the musician manifesting anything but confusion in the rapid and distinct enunciation of his gushing notes. These may be too quick in their utterance for the listener to follow, but they are wonderful both for their rapidity and their harmony. His performance consists of shrill and lively notes, uttered with an apparent air of great agitation, and they are quite as distinct and agreeable, though neither so full nor so rich, as are those of the more celebrated Golden Robin.

"In the Central States, from New York to North Carolina, these birds are not only very abundant, but very generally diffused. Hardly an orchard or a garden of any size can be found without them. They seem to prefer apple trees for their abode, and for the construction of their nests. These structures, though essentially different, are, in their style of architecture, quite as curiously wrought and ingenious as those of the Baltimore. They are sus-

pended from small twigs, often at the very extremity of the branches. In Pennsylvania they are usually formed externally of a peculiar kind of long, tough, and flexible grass. This material is woven through and through in a very wonderful manner, and with as much neatness and intricacy as if actually sewed with a needle. They are hemispherical in shape, open at the top, and generally about four inches in breadth, and three deep. The cavity has a depth and a width of about two inches."

Genus SCOLECOPHAGUS Swainson.

Scolecophagus Swainson, F. Bor.-Am. ii, 1831, 494. Type, *Oriolus ferrugineus* Gmelin.

"Gen. Char. Bill shorter than the head, rather slender, the edges inflexed as in *Quiscalus*, which it otherwise greatly resembles; the commissure sinuated. Culmen rounded, but not flattened. Tarsi longer than the middle toe. Tail even, or slightly rounded.

"The above characteristics will readily distinguish this genus from its allies. The form is much like that of *Agelaius*. The bill, however, is more attenuated, the culmen curved and slightly sinuated. The bend at the base of the commissure is shorter. The culmen is angular at the base posterior to the nostrils, instead of being much flattened, and does not extend so far behind. The two North American species may be distinguished as follows:

"**S. ferrugineus.** Bill slender; height at base not .4 the total length. Color of male black, with faint purple reflection over whole body; wings, tail, and abdomen glossed slightly with green. Autumnal specimens with feathers broadly edged with castaneous rusty. *Female* brownish dusky-slate, without gloss; no trace of light superciliary stripe.

"**S. cyanocephalus.** Bill stout; height at base nearly .5 the total length. Color black, with green reflection over whole body. Head only glossed with purple. Autumnal specimens, feathers edged very indistinctly with umber-brown. *Female* dusky brown, with a soft gloss; a decided light superciliary stripe." (*Hist. N. Am. B.*)

Scolecophagus carolinus (Müll.)

RUSTY BLACKBIRD.

Popular synonym. Rusty Grackle.

Turdus carolinus Müll. Syst. Nat. Suppl. 1776, 146.
Scolecophagus carolinus Ridgw. Proc. U. S. Nat. Mus. 1885, 356.
Oriolus ferrugineus Gmel. S. N. i, 1788, 393.
Gracula ferruginea Wils. Am. Orn. iii, 1811, 41, pl. 21, fig. 3.
Quiscalus ferrugineus Bp. 1824.—Nutt. Man. i, 1832, 199.—Aud. Orn. Biog. ii, 1834, 325; v, 1839, 483, pl. 147; Synop. 1839, 146; B. Am. iv, 65, pl. 222.
Scolecophagus ferrugineus Sw. & Rich. F. B.-A. ii, 1831, 286.—Baird, B. N. Am. 1858, 551; Cat. N. Am. B. 1859, No. 417.—Coues, Key, 1872, 159; 2d ed. 1884, 411; Check List, 1874, No. 221; 2d ed. 1882, No. 331; B. N. W. 1874, 198.—B. B. & R. Hist. N. Am. B. ii, 1874, 203, pl. 35, fig. 4.—Ridgw. Nom. N. Am. B. 1881, No. 273.

Hab. Eastern and northern North America, breeding from Maine to Labrador and Alaska, and wintering in the eastern United States, chiefly south of 38°.

"SP. CHAR. Bill slender; shorter than the head; about equal to the hind toe; its height not quite two fifths the total length. Wing nearly an inch longer than the tail; second quill longest; first a little shorter than the fourth. Tail slightly graduated; the lateral feathers about a quarter of an inch shortest. General color black, with purple reflections; the wings, under tail-coverts, and hinder part of the belly, glossed with green. In autumn the feathers largely edged with ferruginous or brownish, so as to change the appearance entirely. Spring female dull, opaque plumbeous or ashy black; the wings and tail sometimes with a green lustre. Young like autumnal birds. Length of male, 9.50; wing, 4.75; tail, 4.00. Female smaller." (*Hist. N. Am. B.*)

It is only during the colder months that this blackbird makes its appearance in Illinois. Perhaps the greater number pass beyond the limits of our State in midwinter, but the writer has seen small flocks in December and January in the bottom lands near Mount Carmel. In early spring they become quite numerous in swampy forests, congregating mostly about the borders of ponds or the banks of streams. Their peculiar squeaking but not unmusical song, which may be heard just before their departure for the North, somewhat resembles that of the Bronzed Grackle (*Quiscalus æneus*) but is much less harsh and uttered in a higher key. Occasionally, especially during cold weather, small flocks frequent the barn-yards, for the purpose of gathering the grain which has become scattered about during the feeding of the stock.

Scolecophagus cyanocephalus (Wagl.)

BREWER'S BLACKBIRD.

Popular synonyms. Violet-headed or Blue-headed Blackbird; Corral Bird.

Psarocolius cynocephalus WAGL. Isis, 1829, 758.

Scolecophagus cyanocephalus CAB. 1851.—BAIRD, B. N. Am. 1858, 552; Cat. N. Am. B. 1859 No. 332.—COUES, Key. 1872, 160; 2d ed. 1884, 411; Check List. 1874, No. 222; 2d ed. 1882. No. 332; B. N. W. 199.—B. B. & R. Hist. N. Am. B. ii, 1874, 206, pl. 35, fig. 3. —RIDGW. Nom. N. Am. B. 1881, No. 274.

Quiscalus brewerí AUD. B. Am. viii, 1843, 345, pl. 492.

HAB. Western United States, eastern Minnesota, eastern Kansas, and, occasionally, the States along the eastern side of the Mississippi, breeding abundantly as far to the northeast as the vicinity of Pembina, on the Red River of the North. Winters from 40°, or perhaps further north, south into Mexico.

"SP. CHAR. Bill stout, quiscaline, the commissure scarcely sinuated; shorter than the head and the hind toe; the height half the length of culmen. Wing nearly an inch longer than the tail; the second quill longest; the first about equal to the third. Tail rounded and moderately graduated; the lateral feathers about .35 of an inch shorter. General color of male black, with lustrous green reflections everywhere except on the head and neck, which are glossed with purplish violet. *Female* much duller, of a light brownish anteriorly; a very faint superciliary stripe. Length about 10 inches; wing, 5.30; tail, 4.40.

"Autumnal specimens do not exhibit the broad rusty edges of feathers seen in *S. ferrugineus*.

"The females and immature males differ from the adult males in much the same points as *S. ferrugineus* except that the "rusty" markings are less prominent and more grayish. The differences generally between the two species are very appreciable. Thus, in *S. cyanocephalus*, the bill, though of the same length, is much higher and broader at the base, as well as more linear in its upper outline; the point, too, is less decurved. The size is every way larger. The purplish gloss, which in *ferrugineus* is found on most of the body except the wings and tail, is here confined to the head and neck, the rest of the body being of a richly lustrous and strongly marked green, more distinct than that on the wings and tail of *ferrugineus*. In one specimen only, from Santa Rosalia, Mexico, is there a trace of purple on some of the wing and tail feathers." (*Hist. N. Am. B.*)

This species can scarcely be considered as more than a straggler to Illinois. At least the writer is unable to cite many records of its occurrence, while he has himself seen but a single specimen, a female shot at Mount Carmel in December, 1866, and now in the collection of the National Museum, at Washington.

Genus **QUISCALUS** Vieillot.

Quiscalus Vieillot, Analyse, 1816, 36. Type *Gracula quiscala* Linn.
Megaquiscalus Cass. Proc. Phil. Ac. Sci. March, 1866, 409. Type *Quiscalus major* Vieill.
Holoquiscalus Cass. t. c. p. 404. Type *Gracula barita* Linn.

"Sp. Char. Bill as long as the head, the culmen slightly curved, the gonys almost straight; the edges of the bill inflected and rounded; the commissure quite strongly sinuated. Outlines of tarsal scutellæ well defined on the sides; tail long, boat-shaped, or capable of folding so that the two sides can almost be brought together upward, the feathers conspicuously and decidedly graduated, their inner webs longer than the outer. Color black.

"The excessive graduation of the long tail, with the perfectly black color, at once distinguishes this genus from any other in the United States. Two types may be distinguished: one, *Quiscalus*, in which the females are much like the males, although a little smaller and perhaps with rather less lustre; the other, *Megaquiscalus*, much larger, with tail more graduated, the females considerably smaller, and of a brown or rusty color. The *Quiscali* are all from North America or the West Indies (including Trinidad); the *Megaquiscali* are Mexican and Gulf species entirely; while a third group, the *Holoquiscali*, is West Indian." (*Hist. N. Am. B.*)

The genus *Quiscalus* in its most restricted sense, includes but two species, one of them with two geographical races, all of which are confined to eastern North America. Certain authors profess to be unable to distinguish the three forms which were first indicated by Professor Baird in 1858, and eleven years afterward clearly characterized by me in the "Proceedings" of the Philadelphia Academy for 1869, pp. 133–135. The fact nevertheless is evident to any one who will take the trouble to carefully examine large series of specimens (the larger the series the more positive do the differences become) that on the eastern side of the Alleghenies is found, almost exclusively, a form which may instantly be distinguished from that occurring, to the complete exclusion of the coast race, on the western side of the range in question. The coast race or species extends north to the southeastern corner of New York, and along the coast of southern New England, but becomes rare in eastern Massachusetts, beyond which point it has not been traced. To the south it extends in its typical form to northern Florida, but in the southern portion of the latter State it becomes, *by gradual transition*, smaller, with a larger bill, and somewhat different coloration. The Florida bird constitutes a local race, for which the name *Q. quiscula aglæus* Baird is available, the more northern bird being the true *Q. quiscula* (Linn.) Throughout the country between the Alleghenies and Rocky Mountains, and northward to Hudson's Bay and Labrador, as well as throughout the greater part of New England and also the Middle States west of the mountains, *Q. quiscula* is wholly replaced by a bird of similar size and form but totally different coloration. This is the *Q. æneus*, mihi. I have usually ranked it as a race of *Q. quiscula;* but the circumstance that among very large series of both forms (amounting to several hundred specimens) I have never seen one which I could not immediately refer to one or the other, very strongly suggests their specific distinctness, as I had at first claimed for them. A fact equally significant of the correctness of this view is that typical specimens of *Q. æneus* have occasionally been taken, *as undoubted stragglers*, within the region inhabited by *Q. quiscula*, but at the same time no intermediate specimens appear ever to have been found. In accordance, therefore, with definite and consistent principles for my guidance in the application of the fact of intergradation as the test of conspecific relation between closely related forms, I am compelled to recognize *Q. æneus* as a distinct species until intergradation with *Q. quiscula* shall have been proven.

The following comparative diagnoses, which include also both forms of the eastern species, show, briefly, the differential character of *Q. æneus* and *Q. quiscula*. It should be especially noted that the color of the head and neck is of *no importance whatever* as a diagnostic character, but that the coloration of the back and lower parts is the decisive test.

1. **Q. æneus.** Entire body, above and below, uniform and unvarying brassy olive, or olivaceous bronze. Wings gradually shading into bronzy reddish purple, the primaries and tail more purplish violet. Head, neck, and jugulum rich metallic brassy green, steel-blue, violet, or purple, *always very abruptly and sharply defined against the totally different color of the back and breast.*
2. **Q. quiscula.** Plumage of the body varying from dark dull metallic slate-green to violet or purple, *never perfectly uniform, and usually broken by transverse bars of different metallic tints*—golden green, steel-blue, bronze, or purple, according to the individual. Tail and wings bluish or greenish.
   a. quiscula. Head, neck and jugulum varying from brassy green to steel-blue, violet, or purplish bronze, the color (whatever it may be) rarely abruptly defined posteriorly. Body usually with purplish predominating. *Male.* Wing 5.50–5.90; tail 5.20–6.20; bill, from nostril, .88–1.00. *Hab.* Atlantic coast, from northern Florida to Massachusetts.
   b. aglæus. Head, neck, and jugulum usually purplish violet (more bluish anteriorly), and usually sharply defined posteriorly. Body usually dark metallic bronze-green.
   Male. Wing 5.10–5.50; tail 5.05–5.60; bill, from nostril, .90–1.05. *Hab.* Southern Florida.

Quiscalus quiscula æneus Ridgw.*

BRONZED GRACKLE.

Popular synonym. Western Crow Blackbird.

Quiscalus versicolor Aud. B. Am. iv, 1842, 58, pl. 221 (description and account of habits refers in part to *Q. quiscula*).—Baird, B. N. Am. 1858, 555 (part; western specimens).

Quiscalus æneus Ridgw. Proc. Phil. Ac. Sci. 1869, 134.

Quiscalus purpureus var. *æneus* B. B. & R. Hist. N. Am. B. ii, 1874, 218.

Quiscalus purpureus æneus Ridgw. Nom. N. Am. B. 1881, No. 278*b*.—Coues, 2d Check List, 1882, No. 337.

Hab. Interior of North America, from Mississippi Valley to the Rocky Mountains, and north to the Saskatchewan, Hudson's Bay Territory, and Labrador, thence south to Massachusetts, northern New York, etc.; merely casual or occasional east of the Alleghenies south of New York, being replaced along the Atlantic seaboard by *Q. quiscula*.

Subsp. Char. Entire body, above and below, uniform and unvarying brassy olive, or olive-bronze. Wings gradually shading into bronze-purple, the primaries and tail more violet-purple. Head, neck, and jugulum metallic brassy green, steel-blue, violet or purple (according to the individual), always very abruptly defined against the very different color of the back and breast.

Adult male. Total length (fresh), 13.00; extent, 17.75; wing (skins), 5.55–5.75; tail, 5.50–6.20; bill, from nostril, .88–.90. Bill and feet deep black; iris yellowish white.

Adult female. Total length (fresh), 11.25–11.50; extent, 16.00–16.50; wing (in skins), 5.00–5.05; tail, 4.80–4.90; bill, from nostril, .70–.75. Plumage much duller than in the male, the metallic colors less brilliant.

Young. Uniform grayish dusky, without metallic tints. Iris pale brown.

* "A. O. U. Check List;" *Quiscalus æneus*, according to the author's views.

This fine but unpopular bird is very common throughout the State, and, like the Blue Jay, is in many places one of the most familiar of birds, nesting in the groves or shade trees within towns, evincing little fear of man. In the fall they congregate in large numbers, which keep together during the winter, and in the spring when these large companies break up they do not disband entirely, but separate into colonies of greater or less extent, the different pairs of which build their nests in as close proximity to one another as suitable places for their location will permit. In their choice of a location for the nest they are by no means particular, any place where it can be securely attached answering the purpose equally well; and it is by no means unusual to see in the same tree several nests, some saddled on horizontal branches, others built in a large fork, and others again in holes, either natural or those made by the Flicker. On a small island, near Mount Carmel, densely covered with a growth of young willows of twenty to thirty feet in height, but very slender, the writer once found a colony numbering upwards of seventy nests, all attached to the willow trees and supported against the trunks by small twigs. In the immediate vicinity, along the river bank, were many other nests, most of them built inside of holes in the large dead trees or in stumps.

The Crow Blackbird is quite as omnivorous as the Crow or Blue Jay, and whenever opportunity offers will not hesitate to attack and eat smaller birds, especially defenseless young. But his own offspring are sometimes destroyed by carnivorous enemies, the writer having once seen, in the locality mentioned above, a Fox Squirrel (*Sciurus ludovicianus* Custis) emerge from a hole in a large dead tree with a young blackbird in its mouth. The squirrel was attacked by a number of the blackbirds, who were greatly excited, but it paid no attention to their demonstrations, and, after descending, scampered off into the woods with its prey.

The general habits of the Bronzed Grackle are in all respects identical with those of the Purple Grackle (*Q. quiscula*), unless it may be that it is more apt to build its nest in holes of trees than the latter species. We do not think, however, that they really differ in this respect, but believe that *Q. quiscula* will probably be found to avail itself of such nesting sites when they are to be found in the localities which they frequent. Certain it is that *Q. æneus* builds its nests in exactly such situations as are supposed to be usually chosen by *Q. quiscula* whenever no holes are

available for the purpose. From an almost equal familiarity with the two birds, we are able to say that their notes differ decidedly, especially those of the male during the breeding season, the "song" of the western bird being very much louder and more musical, or metallic, than that of its eastern relative.

Family CORVIDÆ.—The Crows and Jays.

"Char. Primaries ten; the first short, generally about half as long as the second (or a little more); the outer four sinuated on the inner edge. The nasal fossæ and nostrils usually more or less concealed by narrow, stiffened bristles (or bristly feathers), with short appressed lateral branches extending to the very tip, all directed forwards (these bristles occasionally wanting). Tarsi scutellate anteriorly, the sides undivided (except sometimes below) and separated from the anterior plates by a narrow naked strip, sometimes filled up with small scales. Basal joint of middle toe united about equally to the lateral, generally for about half the length. Bill generally notched." (*Hist. N. Am. B.*)

The Corvidæ constitutes a very strongly marked family or group of the Oscines, the principal character being the separation of the lateral and anterior scutellæ of the tarsus by a narrow interval which is devoid of smaller scales, the conspicuous nasal tufts (these absent in a few genera) and the absence of an angle at the base of the commissure, which is invariably present in the *Icteridæ* and *Fringillidæ*. Some of the genera resemble gigantic Titmice—*Cyanocitta* corresponding to the genus *Lophophanes* and *Perisoreus* to *Parus*. The resemblance is, however, apparently a purely superficial one, there being many important differences. Thus, "the feathers at the base of the bill in the Jays, are bristly throughout, with lateral branches reaching to the very tip. In *Paridæ* these feathers are inclined to be broader, with the shaft projecting considerably beyond the basal portion, or the lateral branches are confined to the basal portion and extended forwards. There is no naked line of separation between the scutellæ on the outer side of tarsi. The basal joint of the middle toe is united almost or quite to the end to the lateral instead of half-way. The first primary is usually less than half the second, instead of rather more; the fourth and fifth primaries nearly equal and longest, instead of the fifth being longer than the fourth." (*Hist. N. Am. B.*)

Two so-called sub-families of typical *Corvidæ* are recognized, but they are not very well characterized, on account of the evidence of numerous intermediate forms. Taking the North American members of the family there is, however, no difficulty in recognizing the two sub-families, which may be defined as follows

Corvinæ. Bill as long as the head. Tail short, nearly even; wings long and pointed, longer than tail, and nearly reaching its tip; projecting beyond the under tail-coverts, which reach the middle of tail. Tip of wing formed by the third, fourth, and fifth quills, which are longest. Tarsi usually with a row of small scutellæ on each side.

Garrulinæ. Bill usually shorter than head. Tail lengthened, rounded, and generally longer than the wings, which are short, rounded and extend scarcely beyond the lower tail-coverts; these not reaching the middle of the tail. Tip of wing formed by the fourth, fifth, and sixth quills, which are longest. Tarsi usually with a row of small scutellæ on the inner side only.

Subfamily **CORVINÆ**.—The Crows.

Char. Wings long and pointed, longer than the tail, and, when closed, reaching nearly to its tip, extending beyond the under tail-coverts, the third, fourth, and fifth quills forming the tip of the wing.

The following diagnoses may serve to distinguish the three genera of North American *Corvinæ:*

A. (*Corveæ*). Bill compressed, much higher than broad; its tip compressed. Size large (i. e. over 13 inches long), color black, or mainly black.

Color black throughout; bill much compressed, the culmen much arched, and the gonys convex; nasal bristles strong - - - - **Corvus.**

B. (*Nucifrageæ.*) Bill cylindrical, scarcely or not at all higher than broad; its tip depressed. Size small (i. e. less than 15 inches long). Color uniform blue or with ashy on body, and black wings and tail.

Color ashy, with wings and tail mainly black. Culmen convex, gonys slightly concave. Nostrils covered by short nasal tuft - - - **Picicorvus.**

Color uniform blue, bright on the head; the throat streaked with whitish. Culmen straight; gonys slightly convex. Nostrils completely exposed; no nasal tufts - - - - - - - - - **Gymnokitta.**

Only the first of the above genera has representatives in eastern North America, the other two being distinctly western.

Genus **CORVUS** Linnæus.

Corvus Linnæus, Syst. Nat. ed. 10, i, 1758, 105. Type, *Corvus corax* Linn.

"Gen. Char. The nasal feathers lengthened, reaching to or beyond the middle of the bill. Nostrils large, circular, overhung behind by membrane, the edges rounded elsewhere. Rictus without bristles. Bill nearly as long as the tarsus, very stout; much higher than broad at the base, culmen much arched. Wings reaching nearly or quite to the tip of the tail, the outer four primaries sinuated internally. Tarsi longer than the middle toe, with a series of small scales on the middle of each side separating the anterior scutellate portion from the posterior continuous plates. Sides of the head occasionally with nearly naked patches. Tail graduated or rounded." (*Hist. N. Am. B.*)

The following species occur in eastern North America:

A. Feathers of the throat elongated, narrow, and with very distinct outlines. (*Ravens.*)

1. **C. corax sinuatus.** Feathers of the neck and breast dull gray beneath the surface. Wing more than 16 inches, tail 9.50 or more.
2. **C. cryptoleucus.** Feathers of the neck and breast pure white beneath the surface. Wing less than 15 inches; tail less than 9.

B. Feathers of the throat normal; i. e., short, broad, and blended. (*Crows.*)

3. **C. americanus.** Plumage glossed with purplish violet, but this hardly perceptible on head and neck. Wing 12 inches or more; tail 7 or more; culmen 1.80 or more; tarsus 2 or more.

4. **C. ossifragus.** Plumage glossed with violet-blue, more greenish on head, neck and lower parts, the gloss very perceptible throughout. Wings less than 11 inches; tail about 6.50; culmen 1.55; tarsus, 1.65.

Corvus corax sinatus (Wagl.)

AMERICAN RAVEN.

Corvus carnivorus "Bartr." Baird, B. N. Am. 1858, 560; ed. 1860, pl. 21; Cat. N. Am. B. 1859, No. 423.

Corvus corax var. *carnivorus* B. B. & R. Hist. N. Am. B. ii, 1874, 233, 234, pl. 37, fig. 6.

Corvus corax carnivorus Ridgw. Nom. N. Am. B. 1881, No. 280.

Corvus corax Wils. Am. Orn. ix, 1825, 136, pl. 75, fig. 3.—Nutt. Man. i, 1832, 202.—Aud. Orn. Biog. ii, 1834, 476, pl. 101; Synop. 1839, 150; B. Am. iv, 1843, 78, pl. 224.—Coues, Key, 1872, 162; Check List, 1874, No. 226; 2d ed. 1882, No. 338; B. N. W. 1874, 204.

Corvus sinuatus Wagl. Isis, 1829, 748.

Corvus cacalote Wagl. Isis. 1831, 527.—Baird, B. N. Am. 1858, 563; Cat. N. Am. B. 1859, Nos. 423, 424.

Sp. Char. *Adult.* Tail graduated; feathers of throat lanceolate, those of neck, jugulum, and fore part of back gray—at bases. Entire plumage glossy black, the upper parts, especially wings and tail, with rich purplish reflections. Bill and feet black; iris brown. Total length (fresh), 25 to 27 inches; extent, 49 to 51; wing (in skins), about 17; tail, 10.

The Raven is a very local and nowhere abundant bird in Illinois. The writer has seen it only in the bottoms of Big Creek and about the borders of Fox Prairie, in Richland County, where, up to 1871 at least, one or two pairs might be seen at almost any time, usually soaring in circles over the timber. It was never observed in the vicinity of Mount Carmel, nor have I ever been able to hear of its occurrence anywhere in that portion of the State except in the localities mentioned. According to Mr. Nelson it was "formerly a not uncommon resident" in the northeastern portion of the State, but "now [1876] occurs only in winter and is rare." Mr. Nelson further remarks: "Frequents the sand hills along the lake shore from the last of October until spring. The first of November, 1875, I saw several specimens near Waukegan, where they were repeatedly seen flying along the lake shore, and in winter they unite in small flocks and move from place to place."

Corvus americanus Aud.

COMMON CROW.

Popular synonyms. American Crow; Tom Crow (Nevada).

Corvus corone Wils. Am. Orn. iv, 1814, 79, pl. 25, fig. 3 (nec Linn.)—Sw. & Rich. F. B.-A. ii, 1831, 291.—Nutt. Man. i, 1832, 209.

Corvus americanus Aud. Orn. Biog. ii, 1834, 817; v, 1839, 477, pl. 156; Synop. 1859, 156; B. Am. iv, 1842, 87, pl. 225.—Nutt. Man. 2d ed. i, 1840, 221.—Baird, B. N. Am. 1858, 566; Cat. N. Am. B. 1859, No. 426.—Coues, Key, 1872, 162; Check List, 1873, No. 228; B. N. W. 1874, 206.—B. B. & R. Hist. N. Am. B. ii, 1874, 233, 234, pl. 37, fig. 5.

Corvus frugivorus "BARTR." COUES, Pr. Phil. Acad. 1875, 346; 2d Check List, 1882, No. 340.—RIDGW. Nom. Am. B. 1881, No. 282.

HAB. Whole of temperate North America, except northwest coast; south to northern Mexico. Rare in the interior western districts.

SP. CHAR. Tail slightly rounded. Feathers of throat short, blended, those of neck, etc., dusky grayish at bases. *Adult.* Deep black, with violet gloss, the latter fainter on lower parts. Bill and feet deep black; iris brown. *Young.* Dull, lusterless black. Total length (fresh specimens), 18.50–19.50; extent, 37.00–38.50; wing (in skins), about 13.00–13.50; tail, 8.00.

During the breeding season, when the plumage becomes worn or "weather-beaten," there is much less gloss to the plumage. "All specimens shot at this season do not exhibit this peculiarity, and some show it in a more marked degree than others. These specimens are characterized by the entire absence of the violet gloss on the wings and tail, those parts being of a lustreless, purplish brown color. Some specimens have the concealed bases of the feathers of a fine, violet-glossed black, and the residue of a rich bronze hue." (MEARNS, *Bull. Nutt. Orn. Club*, Vol. III, 1878, p. 71.)

So well known a bird as the Common Crow needs no special biography in a work like this. His general habits are as familiar to every one, as are his appearance and voice. There are nevertheless some traits of his character which are hardly appreciated to the extent that they should be, and it is exceedingly probable that he is a much more useful member of bird society than he is given credit for.

SUBFAMILY GARRULINÆ.—THE JAYS.

"CHAR. Wings short, rounded; not longer or much shorter than the tail, which is graduated, sometimes excessively so. Wings reaching not much beyond the lower tail-coverts. Bristly feathers at base of bill variable. Bill nearly as long as the head, or shorter. Tarsi longer than the bill or than the middle toe. Outer lateral claws rather shorter than the inner. (*Hist. N. Am. B.*)

The following genera belong to North America, there being two others (*Psilorhinus* and *Xanthoura*) which barely come within our borders across the lower Rio Grande.

A. Tail very long and much graduated; first primary very narrow, falcate.

Pica. Head without crest; wings and tail metallic green and bluish.

B. Tail about as long as the wings, rounded; first primary not falcate.

a. Head conspicuously crested.

Cyanocitta. Wings and tail blue, barred with black.

b. Head without crest.

Aphelocoma. Above blue, the back (in North American species) more or less gray-

ish, the wings and tail not barred; beneath light grayish or dull whitish (in some Mexican species wholly blue underneath).

Perisoreus. Plumage exceedingly lax and "fluffy." Bill very small, scarcely half the length of the head. Color mainly dull grayish.

Genus **PICA** Brisson.

Pica Brisson, Ornithologia, 1760, ii, 35. Type, *Corvus pica* Linn.

"Gen. Char. Tail very long, forming much more than the total length; the feathers much graduated; the lateral scarcely more than half the middle. First primary falcate, curved, and attenuated. Bill about as high as broad at the base, the culmen and gonys much curved, and about equal; the bristly feathers reaching nearly to the middle of the bill. Nostrils nearly circular. Tarsi very long; middle toe scarcely more than two thirds the length. A patch of naked skin beneath and behind the eye.

"The peculiar characteristic of this genus, in addition to the very long graduated tail, lies in the attenuated, falcate first primary. *Calocitta*, which has an equally long or longer tail, has the first primary as in the Jays generally (besides having the nostrils exposed)." (*Hist. N. Am. B.*)

The American Magpie (*P. pica hudsonica*) belongs to a circumpolar species (*P. pica*) which in the various parts of its range is differentiated into more or less strongly marked geographical races. Many ornithologists do not admit the subspecific distinctness of the American bird, and the differences from the European (typical) form are indeed slight in some specimens, though easily recognized in the majority.

A probably distinct species (*P. nuttalli*), confined to California, differs in having the bill and bare suborbital space bright yellow instead of black.

Pica pica hudsonica (Sab.)

BLACK-BILLED MAGPIE.

Popular synonym. American Magpie.

Corvus pica Wils. Am. Orn. iv, 1811, 75, pl. 35, fig. 2 (*nec* Linn.)—Sw. & Rich. F. B.-A. ii, 1831, 292.—Nutt. Man. i, 1832, 219.—Aud. Orn. Biog. iv, 1838, 408, pl. 357.

Corvus hudsonicus Sabine, App. Franklin's Voy. 1823, 25, 671.

Pica hudsonica Bp. 1838.—Baird, B. N. Am. 1858, 576; Cat. N. Am. B. 1859, No. 432.

Pica melanoleuca var. *hudsonica* Coues, Key, 1872, 164; Check List, 1873, No. 233; B. N. W. 1874, 211.

Pica caudata var. *hudsonica* Allen, Bull. Mus. Comp. Zoöl. iii, 1872, 178.—B. B. & R. Hist. N. Am. B. ii, 1871, 265, 266, pl. 38, fig. 1.

Pica rustica β *hudsonica* Ridgw. Field & Forest, June, 1877, 218.

Pica rustica hudsonica Ridgw. Nom. N. Am. B. 1881, No. 286.—Coues, 2d Check List, 1882, No. 347.

Pica melanoleuca Aud. Synop. 1839, 157; B. Am. iv, 1842, 99, pl. 227.

SP. CHAR. Bill and naked suborbital skin black. Head, neck, breast, interscapulars, lining of wing, tail-coverts, and tibiæ, deep black, the pileum usually glossed with bronze-greenish. Lower parts (except as described), scapulars, and inner webs of primaries, pure white. Wings metallic greenish blue; tail rich metallic green, passing, near tips, through bronze and reddish violet into violet-blue. Total length (fresh specimens), 17.50-21.75; extent, 21.25-25.00; wing (in skins), 8.00-8.50; tail, 12.00-13.50. Feet deep black; iris brown, with bluish gray outer ring.

The occurrence of the Black-billed Magpie at present anywhere in Illinois is extremely doubtful. There is no recent record of its having been taken or even seen within the limits of the State, and its claim to a place in our fauna rests solely on Mr. Kennicott's statement that it is (or was at the time his list was published) a rare winter visitant to the extreme northern counties.

The nest of the Magpie is a very bulky and somewhat remarkable structure, composed exteriorly of sticks of various sizes, forming a spherical mass, the upper portion of which forms a canopy to the nest proper, the entrance being through one side. The eggs are usually six in number, but often as many as nine, and are of a pale olive or grayish white color, thickly speckled with olive-brown.

GENUS **CYANOCITTA** STRICKLAND.

Cyanocitta STRICKL. Ann. Nat. Hist. xv, 1845, 261. Type, *Corvus cristatus* LINN.
Cyanurus "SWAINSON," BAIRD, B. N. Am. 1858.—B. B. & R. Hist. N. Am. B. ii, 1874, 264, 271, et AUCT. (*nec* SWAINS.)

"GEN. CHAR. Head crested. Wings and tail blue, with transverse black bars; head and back of same color. Bill rather slender, somewhat broader than high at the base; culmen about equal to the head. Nostrils large, nearly circular, concealed by bristles. Tail about as long as the wings, lengthened, graduated. Hind claw large, longer than its digit." (*Hist. N. Am. B.*)

Two widely distinct species of this well-marked genus belong to North America, one of them being peculiar to the Eastern Province, the other restricted to the mountainous portions of the Western Province, and south through Mexico to Guatemala and Honduras. The latter is divided into several geographical races, as follows: (1) *C. coronata* (*vera*), Honduras, Guatemala, and southern Mexico; (2) *C. coronata diademata*, central Mexico; (3) *C. coronata macrolopha*, Rocky Mountains of the United States; (4) *C. coronata annectens*, northern Rocky Mountains; (5) *C. coronata stelleri*, northwest coast, from the northern Coast Range of California to Sitka; (6) *C. coronata frontalis*, Sierra Nevada range. These races are very distinct when typical examples are compared; so much so, in fact, that were not true intergradation evident they would be considered separate species. They are all characterized in "History

of North American Birds," Vol. II. page 272, to which the reader is referred for furthur information.

Cyanocitta cristata (Linn.)

BLUE JAY.

Corvus cristatus Linn. S. N. ed. 10, i, 1758, 106; ed. 12, i, 1766, 157.—Wils. Am. Orn. i, 1808, 11, pl. 1, fig. 1.—Nutt. Man. i, 1832, 224.—Aud. Orn. Biog. ii, 1834, 11, v, 1839, 475, pl. 102.

Garrulus cristatus Vieill. 1817.—Sw. & Rich. F. B.-A. ii, 1831, 293.—Aud. B. Am. iv, 1842, 110, pl. 231.

Cyanurus cristatus Baird, B. N. Am. 1858, 580; Cat. N. Am. B. 1859, No. 434.—Coues, Key, 1872, 165; Check List, 1874, No. 234; B. N. W. 1874, 204.—B. B. & R. Hist. N. Am. B. ii, 271, 373, pl. 42, fig. 2.

Cyanocitta cristatus Strickl. Am. Nat. Hist. 1845, 261.—Ridgw. Nom. N. Am. B. 1881, No. 289.—Coues, 2d Check List, 1882, No. 349.

Hab. Whole of eastern North America, north to 56° in the interior, west to the border of the Great Plains; resident and breeding throughout.

"Sp. Char. Crest about one third longer than the bill. Tail much graduated. General color above light purplish blue; wings and tail-feathers ultramarine blue; the secondaries and tertials, the greater wing-coverts, and the exposed surface of the tail, sharply blended with black and broadly tipped with white, except on the central tail-feathers. Beneath white; tinged with purplish blue on the throat, and with bluish brown on the sides. A black crescent on the fore part of the breast, the horns passing forward and connecting with a half-color on the back of the neck. A narrow frontal line and loral region black; feathers on the base of the bill blue, like the crown. Female rather duller in color, and a little smaller. Length, 12.25; wing, 5.65; tail, 5.75." (*Hist. N. Am. B.*)

Few of our birds are more numerous, and none, certainly, are better known than the Blue Jay. With us he has none of the shyness which characterizes him in the more eastern States, but makes himself at home in the door-yards and orchards, building his nest in the apple trees, in shade trees along the streets, or even among the vines trained up the sides of houses; and, with greater or less regularity, especially in winter, obtains a not inconsiderable portion of his or her daily food from the immediate vicinity of the kitchen door.

At Olney, Richland County, a Blue Jay's nest was, in the spring of 1865, found inside an old unused barn in the middle of the town, placed on a sill against the weatherboarding, in the upper part of the building.

Family ALAUDIDÆ.—The Larks.

"Char. First primary very short or wanting. Tarsi scutellate anteriorly and posteriorly, with the plates nearly of corresponding position and number. Hind claw very long and nearly straight. Bill short, conical, frontal feathers extending along side of the bill; the nostrils concealed by a tuft of bristly feathers directed forward. Tertials greatly elongate beyond the secondaries." (*Hist. N. Am. B.*)

The Alaudidæ are preëminently a Palæarctic family, being numerously represented throughout Europe and central Asia, and with many members in the more open portion of the African continent. America possesses a single species, and that of circumpolar distribution.

"The most characteristic feature of the Larks among other oscinine families is seen in the scutellation of the tarsus. The anterior half of this is covered by divided scales lapping around on the sides, but instead of the two plates which go on each side of the posterior half and unite ultimately behind as an acute ridge, there is but one, which laps round on the sides, and is divided into scales like the anterior ones, but alternating with them. The posterior edge of the tarsus is as obtuse as the anterior, instead of being very acute. There is a deep separating groove on the inner side of the tarsus; and there may be really but one plate divided transversely, the edges meeting at this place.

"In the elongated hind claw and lengthened tertials, general style of coloration, mode of life, and manner of nesting, there is decided approximation in the *Alaudidæ* to the *Anthinæ*, of the family *Motacillidæ;* but in these the posterior edge of the tarsus is sharp and undivided transversely, the toes more deeply cleft, the bill more slender, etc.—their relations being rather nearer to the *Sylvicolidæ* than the present family." (*Hist. N. Am. B.*)

Genus OTOCORIS Bonaparte.

Eremophila Boie, Isis, 1828, 322. Type, *Alauda alpestris* Linn. (*Nec Eremophilus* Humb. 1805.)

Otocoris Bonap. Fauna Ital. Uccelli. Introd. 1839, (not paged).

Gen. Char. No spurious primary; bill small, scarcely higher than broad; nostrils circular (the nasal fossæ oblique), concealed by a dense tuft of feathers. Adult with a narrow tuft of feathers on each side of the crown (most developed in the male). Colors of the adult pinkish gray or brownish above, with more or less distinct streaks on the back; a black cheek patch and pectoral crescent (indistinct in the female).

This being the only American genus of Larks, there is no need in the present connection, for comparison with allied genera. There is only one American species, so far as known. This one (*O. alpestris*) inhabits all the more open portions of the continent, breeding from the table-lands of southern Mexico to the shores of the Arctic Ocean, and from the region of the Great Lakes (western New York, Ohio, etc.) to the Pacific. In the various faunal districts of this extensive area, it is divided into a number of well-marked geographical races, which have been distinguished by Mr. H. W. Henshaw ("Auk," I. p. 263) as follows:*

"**O. alpestris.** Size large; wing, 4.44; tail, 3.02; tarsus, .61; bill, .50. (Average of 19 males.) Nape, lesser wing-coverts, rump, etc., deep vinaceous. Habitat, northeastern North America, Labrador, Greenland.

"**O. alpestris praticola.** Size smaller; wing, 4.17; tail, 2.93; tarsus, .83; bill, .46. (Average of 19 males.) Nape, lesser wing-coverts, rump, etc,, pale vinaceous; back dead gray, in contrast; whole aspect generally paler than in true *alpestris*. Habitat, Upper Mississippi Valley and region of Great Lakes.

"**O. alpestris leucolæma.** Size about as in *alpestris*; wing 4.39; tail, 2.96; tarsus, .89; bill, .9. (Average of 12 males.) Chief character, paler; nape, lesser wing-coverts, rump, etc., very pale vinaceous; back gray, in contrast. Throat white or with but faint trace of yellow. Colors are still paler in fall; occasionally at this season there is some yellow on the throat. Habitat, British America and Alaska; western United States only in winter.

"**O. alpestris arenicola.** Size smaller than *leucolæma*; wing, 4.27; tail, 3.35; tarsus, .84; bill, .48. (Average of 16 males.) The colors similar to the last, but throat always decidedly yellow. Fall specimens are brighter, with more yellow on the throat and forehead. Habitat, Great Basin of United States and Rocky Mountains,

"**O. alpestris giraudi.** Wing, 3.78; tail, 2.57; tarsus, .80; bill, .43. (Average of 9 males.) General color above brownish gray; streaks of back very indistinct; yellow of throat bright; breast usually pale yellow. Habitat eastern and southeastern Texas.

"**O. alpestris chrysolæma.** Wing 3.98; tail, 2.91; tarsus, .83; bill, .46 (Average of 4 males.) Much deeper in color than *arenicola*. Nape, etc., deep pinkish rufous; throat deep yellow, but breast always white. Habitat, Mexico, possibly across the border into southern Arizona and New Mexico.

"**O. alpestris rubea.** Wing, 3.51; tail, 2.71; tarsus, .77; bill, .45. (Average of 11 males.) General color above, deep cinnamon or ferruginous; throat bright yellow; streaks on dorsum nearly obsolete. Habitat, California.

"**O. alpestris strigata.** Wing, 3.99; tail, 2.75; tarsus, .76; bill, .44. (Average of 2 males.) Coloration above very dark; much less cinnamon than in either *rubea* or *chrysolæma*; back distinctly striped with dusky; breast usually yellow. In some fall specimens the yellow overspreads the entire under parts. Habitat, coast region of Washington Territory and Oregon."

* The color descriptions are based on males in breeding plumage.

Otocoris alpestris (Linn.)

SHORE LARK.

Popular synonyms. Snow Lark; Snowbird; Prairie Lark; Skylark; American Skylark; Horned Lark.

Alauda alpestris LINN. S. N. ed. 10, i, 1758, 166.
Otocoris alpestris BP. Fauna Ital. Ucc. Introd. 1839 (not paged).—HENSHAW, Auk, July, 1884, 257, 263.
Eremophila alpestris BOIE, Isis. 1828, 322.—COUES, Key, 1872, 89; Check List, 1874, No. 53; 2d Check List, 1882, No. 82; 2d Key, 1884, 281 (part).—RIDGW. Nom. N. Am. B. 1881, No. 300 (part).
Eremophila alpestris var. *alpestris* B. B. & R. Hist. N. Am. B. ii, 1874, 143.
Eremophila alpestris a. *alpestris* COUES, B. N. W. 1874, 37.
Alauda cornuta WILS. Am. Orn. i, 1808, 87 (in text).—SW. & RICH. F. B.-A. ii, 1831, 121.
Eremophila cornuta BOIE, Isis, 1828, 322.—BAIRD, B. N. Am. 1858, 403; Cat. N. Am. B. 1859, No. 302.

This larger, darker colored form of the Shore Lark is an irregular winter visitant, sometimes, however, occurring in large flocks. Its habits are identical with those of the resident race.

Otocoris alpestris praticola (Hensh.)

PRAIRIE LARK.

Popular synonyms. (Same as those of *alpestris* proper.)

Eremophila alpestris AUCT., ex-parte (*nec* BOIE).
Otocoris alpestris praticola HENSHAW, Auk, i, No. 3, July, 1884, 364.

HAB. Mississippi Valley and region of the Great Lakes, breeding, and resident, east to western New York.

SUBSP. CHAR. *Adult male in spring* (No. 90763, U. S. Nat. Mus., Richland Co., Ill., May 16, 1883; R. Ridgway): Posterior portion of crown, occiput, nape, sides of neck and breast, lesser wing-coverts, and shorter upper tail-coverts, light vinaceous; back, scapulars, and rump, grayish brown, the feathers with darker centres, becoming darker and much more distinct on the rump; middle wing-coverts light vinaceous terminally, brownish gray basally. Wings (except as described) grayish brown, the feathers with paler edges; outer primary with outer web chiefly white. Middle pair of tail-feathers light brown (paler on edges), the central portion (longitudinally) much darker, approaching dusky; remaining tail-feathers uniform black, the outer pair with exterior web broadly edged with white. Longer upper tail-coverts light brown, edged with whitish and marked with a broad lanceolate streak of dusky. Forehead (for about .15 of an inch) yellowish white, this continued back in a broad superciliary stripe of nearly pure white; fore part of crown (for about .35 of an inch) deep black, continued laterally back to and including the ear-like tufts; lores, suborbital region, and broad patch on cheeks (with convex posterior outline) deep black; jugular crescent also deep black, this extending to the lower part of throat; chin and throat pale straw-yellow, gradually fading into white on sides of foreneck; anterior half of ear-coverts white, posterior half drab-gray, each portion forming a crescent-shaped patch. Lower parts posterior to the jugular crescent pure white, the sides of the breast light vinaceous, the sides similar but browner and indistinctly streaked with darker. Upper mandible plumbeous black, lower bluish plumbeous; iris deep brown; legs and feet brownish black. Wing, 4.30; tail, 2.85; culmen, .47; tarsus, .85.

Adult male in winter (No. 95583, Gainesville, Texas, Feb. 12, 1884; G. H. Ragsdale): Similar to the spring plumage, but darker, with the vinaceous somewhat obscured by grayish brown, the black by pale tips to the feathers, and yellow of throat slightly deeper. Wing, 4.20; tail, 3.00; culmen, .43; tarsus, .85.

Adult female in spring (No. 90760, Richland Co., Ill., May 25, 1884; R. Ridgway): Above grayish brown, the pileum narrowly and distinctly, the dorsal region broadly and less sharply, streaked with dusky; nape, lesser wing-coverts, and shorter upper tail-coverts dull light vinaceous, the first very indistinctly streaked. A narrow frontlet and broad superciliary stripe (the latter very sharply defined above) dull white; lores, suborbital region, and triangular patch on cheeks, dull brownish black, without sharp definition posteriorly; auriculars drab, the anterior half lighter; chin and throat white, the former faintly tinged with yellowish; jugulum crossed by a distinct band of black, narrower and less intense in color than in the male; rest of lower parts white, tinged with pale brownish on breast, the sides (especially of breast) pale isabella-brownish, the flanks indistinctly streaked with darker. Wing, 3.85; tail, 2.50; culmen, .45; tarsus, .80.

Adult female in winter (No. 85417, Mt. Carmel, Ill., Dec. 20, 1874; S. Turner): Differing from the summer plumage in being browner, and with the streaks on the pileum less distinct, the whitish frontlet obsolete, and the superciliary stripe less sharply defined; the lores, suborbital region, and cheeks dull brownish, like the auriculars, the latter with an indistinctly lighter central spot; chin and throat dull buffy white, with a tinge of straw-yellow, changing to clearer buffy white on sides of foreneck; jugulum with an indistinct blackish patch, the feathers broadly bordered with dull whitish. Whole breast and sides light isabella-color, indistinctly streaked with darker; abdomen and crissum white. Wing, 3.75; tail, 2.45; culmen, .40; tarsus, .80.

Young, first plumage (male, No. 90761, May 29, and female, No. 90792, May 16, Richland Co., Ill.; R. Ridgway): Above brownish black, the wings brownish; back dotted with sharply defined deltoid and rhomboid specks of white; pileum with similar but much more minute markings, and rump also varied in the same manner, but spots rather more transverse than on the back. Lesser and middle wing-coverts brownish black, broadly tipped with buffy white; greater coverts dusky, edged with isabella-brown, and narrowly tipped with pale buff; prevailing color of closed remiges isabella-brown, the tertials, however, darker brown, bordered with buff, this bordered internally with a dusky submargin. Lower parts dull white, the jugulum, sides of breast, and sides, dull isabella-buff, spotted or clouded with dusky.

Measurements: wing, 4.30; tail, 3.08; tarsus, .80; bill, .45 (largest of 16 males).

Measurements: wing, 4.10; tail, 2.80; tarsus, .78; bill, .45 (smallest of 16 females).

"The first indications of a departure from the type of the true *alpestris* are to be noticed in the region to the south and west of the Great Lakes, especially in Illinois. The birds of this region are to be distinguished as a race from *alpestris* proper by smaller size and by paler colors. Specimens in the breeding plumage are at hand from Minnesota, Wisconsin, Michigan, New York, Illinois, Indiana, Missouri, and eastern Kansas. Those from Michigan are paler than any of the others, and suggest an approach to the *leucolæma* type.

"In connection with this race, it is of interest to note that it appears to be gradually extending its range and to be encroaching on a territory which by reason of recent deforestation has been made to approach the conditions this prairie-loving species seeks. Thus Dr. C. H. Merriam writes that it has made its appearance in Lewis

county, New York, within a very few years, and appears to be gaining a foothold there. The number of specimens of this form before me is very large, and while they show it to be a well-marked race, especially when extremes of either form are compared, they also prove that on the one hand it intergrades with *alpestris* and on the other with *leucolæma*, according as the respective regions inhabited by these forms are approached. Certain specimens also from Kansas more than hint that, as we go westward, it passes into *arenicola* of the plains. A winter specimen of this form from Texas indicates the extent of its dispersion at this season." (HENSHAW, *l. c.*)

This common but by no means well-known bird is a constant resident throughout the State, except in the wooded districts, although the same individuals probably nowhere remain the year round in any one locality. It is mostly confined to the prairie portions, but has spread to all the cultivated districts, and there is no doubt that its range has greatly extended of late years as the country has become more cleared of forest and a greater area brought under cultivation.

Family **TYRANNIDÆ**.—The Tyrant Flycatchers.

Characters. "Primaries ten. Bill in typical forms broad, triangular, much depressed, abruptly decurved and notched at tip, with long bristles along gape. Tarsi with scutellæ extending around the outer face of tarsus from the front to back; sometimes divided on the outer side. Bill with culmen nearly as long as the head, or shorter; straight to near the tip, then suddenly bent down into a conspicuous hook, with a notch behind it; tip of lower jaw also notched. Commissure straight to near the notch; gonys slightly convex. Nostrils oval and rounded, in the anterior extremity of the nasal groove, and more or less concealed by long bristles which extend from the posterior angle of the jaws along the base of the bill, becoming smaller, but reaching nearly to the median line of the forehead. These bristles with lateral branches at the base. Similar bristles are mixed in the loral feathers and margin the chin. Tarsi short, generally less than middle toe, completely enveloped by a series of large scales, which meet near the posterior edge of the inner side, and are separated either by naked skin or by a row of small scales. Sometimes a second series of rather large plates is seen on the posterior face of the tarsus; these, however, usually on the upper extremity only. Basal joint of middle toe united almost throughout to that of the outer toe, but more than half free on the inner side; outer lateral toe rather the longer. Wings and tail variable; first quill always more than three fourths the second. The outer primaries sometimes attenuated near the tip.

"The primary characters given above will serve to distinguish the North American *Tyrannidæ* from their allies; the essential features consisting in the peculiarity of the scales of the tarsus and the ten primaries. In the *Sylvicolidæ* there are species as truly "flycatching," and with a depressed bristly bill, but the nine (not ten) primaries, and the restriction of the scales to the anterior face of the tarsus, instead of extending entirely round the outer side, will readily separate them." (*Hist. N. Am. B.*)

The following analysis of genera is taken from "History of North American Birds" (Vol. II, pp. 307, 308), those belonging exclusively to the southwestern border of the United States being omitted.

TYRANNI. Size large: colors generally brilliant; crown with a brighter colored crest, usually concealed; outer primaries abruptly contracted or attenuated near the tip; upper scales of tarsus usually continuing round on the outside and behind. Nest in trees, very bulky, containing much downy material; eggs white or pinkish, with ovate dots of rich brown, of various shades.

Milvulus. Tail exceedingly forked and lengthened; more than twice as long as the wings.

Tyrannus. Tail moderate, nearly even or slightly forked; less than the wings.

TYRANNULI. Size generally small; colors usually plain; crown without any colored crest concealed by the tips of the feathers; primaries normal; scales of the upper part of the tarsus usually continuing only to the middle of the outer face, and a second series opposite to them behind.

1. Tail lengthened; about equal to the wings, which reach scarcely to the middle.

   Myiarchus. Tarsus equal to the middle toe, which is decidedly longer than the hinder one. Tail even or rounded. Throat pale ash, rest of lower parts yellow generally, the primaries edged with rufous, and inner webs of tail-feathers with more or less of the same color. Nest in a cavity of a tree, of loose material; eggs whitish, with intricate tangled lines and streaks of dark brown, the general effect salmon-color.

   Sayornis. Tarsus rather longer than the middle toe, which is scarcely longer than the hind toe. Tail slightly forked. Bill very narrow. No light orbital ring, nor distinct bands on wings; both mandibles black. Nest attached to rocks or parts of buildings, very compact and bulky, containing much mud in its composition; eggs pure white, immaculate, or with very minute sparse dots near larger end.

2. Tail decidedly shorter than the wings, which reach beyond its middle. Tarsus shorter than the middle toe.

   Contopus. Hind toe much longer than the lateral. Tail considerably forked. Wings long, pointed; much longer than the tail, reaching beyond the middle of the latter; first quill about equal to the fourth. Bill broad. Color olive-gray, and white, sometimes with a yellowish tinge beneath. Lower mandible pale colored. Nest saucer-shaped, compact, and very small, saddled very securely upon a thick branch; eggs cream-colored, with a zone of lilac and rich brown blotches round the large end.

3. Tail shorter than the wings, as in the last. Tarsus considerably longer than the middle toe; hind toe much longer than the lateral. Tail nearly even, sometimes slightly rounded, but little shorter than the wings; first primary much shorter than the fourth.

   Empidonax. Head moderately crested; tail about even. Bristles of bill reaching about half way to tip. Legs stout. A conspicuous light orbital ring, and distinct band, on the wing. More or less tinged with sulphur-yellow on lower parts. Nest variously constructed, deeply cup-shaped, compact or loose, entirely of either grassy or fibrous and downy material, and fixed to slender twigs or lodged in a crotch between thick branches; eggs white, immaculate, or with blotches of brown round larger end.

Genus **TYRANNUS** Cuvier.

Tyrannus Cuvier, Leçons Anat. Comp. 1799, abl. li. Type, *Lanius tyrannus* Linn.

Gen. Char. Tyrant-birds of large medium, or rather small size, with strong, conical bills, strongly bristled rictus, even, emarginated, or slightly rounded tail, and the ends of the outer primaries abruptly narrowed. Crown with a concealed colored crest (red, orange, or yellow); plumage without streaks or bars.

The above brief diagnosis, although imperfect, will suffice to distinguish the members of *Tyrannus* from those of allied genera. *Milvulus* agrees in the attenuation of the outer primaries, the colored crest, and many other features, but the tail is excessively forked, the lateral feathers twice, or more, as long as the middle pair. *Pitangus* is also quite similar in many respects, but has the bill

more elongated, less depressed, the outlines straighter, while there are various other differences. Upon the whole, the genus may be considered quite a natural group.

The species vary among themselves not only in colors, but in other respects also, each one having its own peculiarities of external form, so that were all identical in coloration they could even then be readily distinguished. Attempts have been made to subdivide the genus, but all have proved unsatisfactory. There is, truly, a vast difference in size and form between the robust, almost gigantic, *T. magnirostris*, and the little *T. aurantio-atrocristatus;* but as other species are variously intermediate, it seems best to consider the variations of form and size in this genus as of mainly specific importance.

The single eastern species and two western ones which may be expected to occur in Illinois differ from one another as follows:

A. Lower parts white, upper parts blackish.

1. **T. tyrannus.** Wings black, feathers margined with white. Tail black, sharply tipped with white.

B. Lower parts yellow, ashy anteriorly; upper parts ashy olive.

2. **T. verticalis.** Wings brownish dusky, feathers indistinctly edged with paler. Tail deep black, the outer webs of lateral feathers pure white, in abrupt contrast. Throat and jugulum pale ashy-gray.
3. **T. vociferans.** Wings light brownish gray, the feathers with paler edges. Tail dull black, the tip dull grayish, as are also the outer webs of the lateral feathers. Throat and jugulum deep slate-gray.

Tyrannus tyrannus (Linn.)

KINGBIRD.

Popular synonyms. Bee Bird; Bee Martin.

Lanius tyrannus Linn. S. N. ed. i, 1758, 94; ed. 12, i, 1766, 136.

Muscicapa tyrannus Wils. Am. Orn. i, 1808, 66, pl. 13, fig. 1.—Nutt. Man. i, 1832, 265.—Aud. Orn. Biog. i, 1840, 453; v, 1842, 420, pl. 79; Synop. 1839, 40; B. Am. i, 1839, 204, pl. 56.

Tyrannus tyrannus Jord. Man. Vert. ed. 4, 1884, 96.

Lanius tyrannus, var. *γ. carolinensis* Gmel. S. N. i, 1788, 302.

Tyrannus carolinensis Temm. Tabl. Meth. 1836, 24.—Baird. B. N. Am. 1858, 171; Cat. N. Am. B. 1859, No. 124.—Coues, Key, 1872, 169; Check List, 1874, No. 242; 2d ed. 1882, No. 368; B. N. W. 1874, 235.—B. B. & R. Hist. N. Am. B. ii, 1874, 316, pl. 43, fig. 4.—Ridgw. Nom. N. Am. B. 1881, No. 304.

Hab. Eastern North America, north to 57° in the interior, west, regularly, to and including the Rocky Mountains, and irregularly to the Pacific coast, especially along northern boundary of the United States; in winter, the whole of Middle America, and south to Peru and Bolivia; Cuba and Bahamas.

"Sp. Char. *Adult.* Above black, becoming plumbeous on the back, scapulars, and rump; large wing-coverts and remiges edged with whitish; upper tail-coverts bordered with white, and tail broadly tipped with the same. Below pure white, strongly shaded with ash-gray across the jugulum. Middle of the crown with a concealed patch of bright orange-red. *Young.* Above dusky brownish-slate, the wing-coverts bordered with pale

fulvous, the remiges with dull whitish; upper tail-coverts bordered with pale rusty; tail tipped with pale fulvous, or brownish white. Beneath as in the adult, but jugulum tinged with pale fulvous. No colored patch on vertex.

Wing, 4.45–4.75; tail, 3.40–3.75; bill, from nostril, .50–.57, depth at base, .24–.27; width, .37–.40; tarsus, .70–.78; middle toe, .55–.60.

The Bee Bird or Bee Martin is a very common bird throughout the State, and its general habits are well known. It is a summer resident, arriving in April and departing early in September.

"No one of our common birds," says Dr. Brewer, "possesses more strongly marked characteristics of manners and habits than this species. Its pugnacious disposition during the breeding-season, the audacious boldness with which it will attack any bird larger than itself, the persistent tenacity with which it will continue these attacks, and the reckless courage with which it will maintain its unequal warfare, are well-known peculiarities of this interesting and peculiar species. Its name, Kingbird, is given it on the supposition that it is superior to all other birds in these contests. My own observations lead me to the conclusion that writers have somewhat exaggerated the quarrelsome disposition of this bird. I have never, or very rarely, known it to molest or attack any other birds than those which its own instinct prompts it to drive away in self-defense, such as Hawks, Owls, Eagles, Crows, Jays, Cuckoos and Grakles. These it will always attack and drive off to quite a distance from their nests Nothing can be more striking than the intrepidity with which one of these birds will pounce upon and harass birds vastly larger and more powerful than itself. The Kingbird is always prompt to perceive the approach of one of these enemies, and always rushes out to meet it. Mounting in the air high above, it pounces down upon its back, upon which it will even rest, furiously pecking at the exposed flanks of its victim, and only leaving it to descend again and again with the same unrelenting animosity. In these encounters it always comes off conqueror."

Genus **MYIARCHUS** Cabanis.

Myiarchus Cabanis, Tschudi's Fauna Peruana, 1844-46, 152. Type, *Muscicapa ferox* Gmel.

"Gen. Char. Tarsus equal to or longer than the middle toe, which is decidedly longer than the hind one. Bill wider at base than half the culmen. Tail broad, long, even, or slightly rounded, about equal to the wings, which scarcely reach to the middle of the tail;

the first primary shorter than the sixth. Head with elongated lanceolate distinct feathers. Above brownish olive, throat ash, belly yellow. Tail and wing feathers varied with rufous. (*Hist. N. Am. B.*)

This genus is one of the most strongly marked in the entire family. This species are of exceptionally irritable, pugnacious disposition, continually quarreling among themselves, and during the breeding-season, attacking all larger birds which approach the vicinity of the nest. The latter is placed within holes in trees, and the eggs are remarkable for the fine and intricate pencilings of various rich shades of brown upon a creamy ground. In fact they are among the most striking in their color and markings of all bird's eggs.

A single species (*M. crinitus*) inhabits eastern North America, another (*M. cinerascens*) replacing it in the west.

Myiarchus crinitus (Linn.)

CRESTED FLYCATCHER.

Popular synonyms. Great Yellow-bellied Flycatcher; Great crested Flycatcher.

Muscicapa crinita Linn. S. N. ed. 12, i, 1766, 325.—Wils. Am. Orn. ii, 1810, 75, pl. 13, fig. 2.—Nutt. Man. i, 1832, 271.—Aud. Orn. Biog. ii, 1834, 176; v, 1839, 423, pl. 129; Synop. 1839, 40; B. Am. i, 1840, 209, pl. 57.

Tyrannus crinitus Sw. 1826.—Nutt. Man. 2d ed. 1840, 302.

Myiarchus crinitus Cab. 1855.—Baird, B. N. Am. 1858, 128; Cat. N. Am. B. 1859, No. 130.—Coues, Key, 1872, 171; Check List, 1874, No. 247; 2d ed. 1882, No. 373; B. N. W. 1874, 238.—B. B. & R. Hist. N. Am. B. ii, 1874, 334, pl. 43, fig. 3.—Ridgw. Nom. N. Am. B. 1881, No. 312.

Hab. Eastern United States and British Provinces, but rare northeastward beyond the Connecticut valley; west to the edge of the Great Plains. In winter, Guatemala, and south to Costa Rica; Cuba?

"Sp. Char. Head with a depressed crest. Third quill longest; fourth and second successively but little shorter; first a little longer than seventh; much shorter than sixth. Tail decidedly rounded or even graduated; the lateral feathers about .25 of an inch shorter. Upper parts dull greenish olive, with the feathers of the crown and to some extent of the back showing their brown centres; upper tail-coverts turning to pale rusty brown. Some feathers at the base of the bill, lores, sides of the head as high as the upper eyelid, sides of the neck, throat, and forepart of the breast, bluish ashy; the rest of the lower parts, including axillaries and lower wing-coverts, bright sulphur-yellow. A pale ring round the eye. Sides of the breast and body tinged with olivaceous. The wings brown; the first and second rows of coverts, with the secondary and tertial quills, margined externally with dull white, or on the latter slightly tinged with olivaceous yellow. Primaries margined externally for more than half their length from the base with ferruginous; greater portion of the inner webs of all the quills very pale ferruginous. The two middle tail-feathers light brown, shafts paler; the rest have the outer web and a narrow line on the inner sides of the shaft brown, pale olivaceous on the outer edge; the remainder ferruginous to the very tip. Outer web of exterior feather dull brownish yellow. Feet black. Bill dark brown above and at the tip below; paler towards the base. Length, 8.75; wing, 4.25; tail, 4.10; tarsus, .85."

"The young is hardly appreciably different, having merely the wing-coverts tinged with rusty at the ends." (*Hist. N. Am. B.*)

This bird, while probably more numerous than the Kingbird, at least in the more heavily wooded districts, is by no means so well known. It is essentially a woodland species, being commonest in the wildest parts of the forest, where its shrill, querulous, whistling notes are in accord with the surroundings. It is by no means confined to such localities, however, but frequently takes up its abode in orchards, even in the midst of towns, and occasionally becomes rather a familiar bird. At Mount Carmel several pairs nested every summer inside the town limits, and one pair raised a brood in a nest which was built in a window corner of the county jail, a brick building, which stood in the very centre of the town. The usual position, however, of the nest of this species is a hole in a tree, either a natural cavity or a deserted Woodpecker's hole. The nest, as a rule, is composed of a very miscellaneous assortment of materials, such as dried grasses, feathers, hair, etc., to which is usually added one or more cast-off snake skins, perhaps for ornament. The eggs are probably more remarkable for their coloring and marking than those of any other North American bird, being "scratched" over with lines of rich purple and brown on a buffy or cream-colored ground.

While rarely attacking birds of large size, the Great Crested Fly-catcher is a tyrant among the smaller species, charging with great impetuosity upon every one which comes in the immediate vicinity of the nesting place.

Genus **SAYORNIS** Bonaparte.

Sayornis Bonap. Coll. Delattre, 1854, 87. Type, *Tyrannula nigricans* Swains.
Aulanax Cabanis, Journal für Orn. 1856, 1. Same type.

"Gen. Char. Head with a blended depressed moderate crest. Tarsus decidedly longer than middle toe, which is scarcely longer than the hind toe. Bill rather narrow; width of base about half the culmen. Tail, broad, long, slightly forked; equal to the wings, which are moderately pointed, and reach to the middle of the tail. First primary shorter than sixth." (*Hist. N. Am. B.*)

This genus agrees with *Myiarchus* in the length of the broad tail, but has a longer tarsus and a different style of coloration.

The three North American species, although very distinct in coloration, agree closely in habits. They are all familiar birds, fond of the society of man, taking up their abode about the barn-yard, and placing their nests underneath the carriage-shed or any suitable place about the farm buildings.

One species (*S. nigricans*) is confined to the Pacific coast and the southern border, and thence south into Mexico. Another (*S. saya*) has a very extensive distribution over the western portions of the continent, and has even been once taken in Illinois. Our list therefore includes two of the three species, which may be distinguished as follows:

A. Belly white or sulphur-yellowish.

1. **S. phœbe.** Above grayish olive, the head much darker; beneath dull white or sulphur-yellowish, the sides of the breast grayish.

B. Belly tawny ochraceous

2. **S. saya.** Above brownish gray, the tail black; throat and breast grayish, rest of lower parts tawny ochraceous.

Sayornis phœbe (Lath.)

PHŒBE.

Popular synonyms. Pewee; Barn Pewee or Phœbe; Bridge Pewee or Phœbe; Pewit Flycatcher.

Muscicapa fusca GMEL. S. N. i, 1788, 93 (*nec* BODD. 1783).—AUD. Orn. Biog. ii, 1834, 122; v, 1839, 424, pl. 120; Synop. 1839, 43; B. Am. i, 1840, 223, pl. 63.

Tyrannus fuscus NUTT. Man. ed. 2, i, 1840, 312.

Sayornis fuscus BAIRD, B. N. Am. 1858, 184; Cat. N. Am. B. 1859, No. 135.—COUES, Key, 1872, 172; Check List, 1874, No. 252; 2d ed. 1882, No. 379; B. N. W. 1874, 241.—B. B. & R. Hist. N. Am. B. ii, 1874, 343, pl. 45, fig. 2.—RIDGW. Nom. 1881, No. 315.

Muscicapa atra GMEL. S. N. i, 1788, 946 (*nec* MULL. 1776).—NUTT. Man. i, 1832, 278.

Muscicapa phœbe LATH. Ind. Orn. ii, 1790, 489.

Sayornis phœbe STEJN. Auk. ii, Jan. 1885, 51.

Muscicapa nunicola WILS. Am. Orn. ii, 1810, 78, pl. 13, fig. 4.

HAB. Eastern United States and British Provinces, west to the edge of the Great Plains; winters in more southern United States (north to about 38°), and eastern Mexico south to Vera Cruz; Cuba.

"SP. CHAR. Sides of breast and upper parts dull olive-brown, fading slightly towards the tail. Top and sides of head dark brown. A few dull white feathers on the eyelids. Lower parts dull yellowish white, mixed with brown on the chin, and in some individuals across the breast. Quills brown, the outer primaries, secondaries, and tertials edged with dull white. In some individuals the greater coverts faintly edged with dull white. Tail brown; outer edge of lateral feathers dull white; outer edges of the rest like the back. Tibiæ brown. Bill and feet black. Bill slender, edges nearly straight. Tail rather broad and slightly forked. Third quill longest; second and fourth nearly equal; the first shorter than sixth Length, 7 inches; wing, 3.42; tail, 3.30.

"In autumn, and occasionally in early spring, the colors are much clearer and brighter. Whole lower parts sometimes bright sulphur-yellow; above, greenish olive; top and sides of the head tinged with sooty. In the young of the year the colors are much duller; all the wing-coverts broadly tipped with light ferruginous, as also the extreme ends of the wing and tail-feathers. The brown is prevalent

on the whole throat and breast; the hind part of the back, rump, and tail strongly ferruginous." (*Hist. N. Am. B.*)

The Pewee or Phœbe is one of that charming coterie of the feathered tribe who cheer the abode of man with their presence. Less numerous than the Chipping Sparrow, the Catbird, the Barn Swallow, or even the Bluebird, there are still few farm-yards without a pair of Pewees, who do the farmer much service by lessening the number of flies about the barn, and by calling him to his work in the morning with their cheery notes.

Says Dr. Brewer: "This species is attracted both to the vicinity of water and to the neighborhood of dwellings, probably for the same reason—the abundance of insects in either situation. They are a familiar, confiding, and gentle bird, attached to localities, and returning to them year after year. They build in sheltered situations, as under a bridge, under a projecting rock, in the porches of houses, and in similar situations. I have known them to build on a small shelf in the porch of a dwelling; against the wall of a railroad station, within reach of the passengers; and under a projecting window-sill, in full view of the family, entirely unmoved by the presence of the latter at meal time."

Sayornis saya (Bonap.)

SAY'S PHŒBE.

Popular synonyms. Say's Pewee; Say's Flycatcher; Rocky Mountain Pewee.

Muscicapa saya Bp. Am. Orn. i, 1825, 20, pl. 2, fig. 2.—Nutt. Man. i, 1832, 277.—Aud. Orn. Biog. iv, 1838, 428, pl. 359; Synop. 1839, 41; B. Am. i, 1840, 217, pl. 39.

Tyrannus saya Nutt. Man. 2d ed. i, 1840, 311.

Sayornis sayus Baird, B. N. Am. 1858, 185; Cat. N. Am. B. 1859, No. 136.—Coues, Key, 1872, 172; Check List, 1874, No. 250; 2d ed. 1882, No. 377, (*"sayi"*); B. N. W. 1874, 240.—B. B. & R. Hist. N. Am. B. ii, 1874, 347, pl. 45, fig. 3.—Ridgw. Nom. N. Am. B. 1881, No. 316, (*"sayi"*)

Hab. Western North America from the Great Plains to the Pacific, north, in the interior, to latitude 60°; straggling east to Michigan, Wisconsin, and northern Illinois. In winter, south to Vera Cruz, Mexico.

"Sp. Char. Above and on the sides of the head, neck, and breast, grayish brown, darker on the crown; region about the eye dusky. The chin, throat, and upper part of the breast similar to the back, but rather lighter and tinged with the color of the rest of the lower parts, which are pale cinnamon. Under wing-coverts pale rusty white. The wings of a rather deeper tint than the back, with the exterior vanes and tips of the quills darker. Edges of the greater and secondary coverts, of the outer vane of the outer primary, and of the secondaries and tertials, dull white. The upper tail-coverts and tail nearly black. Edge of outer vane of exterior tail-feather white. Bill dark brown, rather paler beneath. The feet brown. Second, third, and fourth quills nearly equal; fifth nearly equal to sixth; sixth much shorter than the fifth. Tail broad, emarginate. Tarsi with a posterior row of scales. Length, 7 inches; wing, 4.30; tail, 3.35.

"The young of the year have the upper parts slightly tinged with ferruginous; two broad (ferruginous) bands on the wings formed by the tips of the first and second coverts. The quills and tail rather darker than in adult specimen.

"Autumnal specimens are simply more deeply colored than spring examples, the plumage softer and more blended." (*Hist. N. Am. B.*)

According to Mr. Nelson (*Bull. Essex Inst.* Vol. VIII., 1876, p. 113), "Two specimens of this species are registered in the catalogue of birds in the Museum of the Northwestern University, at Evanston, from 'West Northfield, Illinois, collected by R. Kennicott.' These specimens are not in the collection at present. Dr. Hoy has also taken it in Wisconsin."

Genus **CONTOPUS** Cabanis.

Contopus Cabanis, Journ. für Ornith. iii, Nov. 1885, 479. Type *Muscicapa virens* Linn.

"Gen. Char. Tarsus very short, but stout; less than the middle toe and scarcely longer than the hinder; considerably less than the culmen. Bill quite broad at the base; wider than the culmen. Tail moderately forked. Wings very short and much pointed, reaching beyond the middle of tail; the first primary about equal to the fourth. All the primaries slender and rather acute, but not attenuated. Head moderately crested. Color olive above, pale yellowish beneath, with a darker patch on the sides of the breast. Under tail-coverts streaked in most species. A tuft of cottony white feathers on each side of the rump (concealed in most species).

"This genus is pre-eminently characterized among North American Flycatchers by the very short tarsi and the long and much pointed wings.

"In most other genera as *Sayornis*, *Myiarchus* and *Empidonax*, a trace of cottony tuft may be discovered by careful search on the flanks; but in the present genus, there is, in addition, the tufts on the rump, not found in the others." (*Hist. N. Am. B.*)

Of the four known North American species only two have not been recorded from the region east of the Mississippi River. One of them (*C. pertinax* Cab.) occurs only along the southern border in Arizona, and therefore cannot reasonably be expected; another, however (*C. richardsonii* Swains.), is of very general distribution throughout the west, and may very possibly sometimes stray east of the Missouri River. This species is therefore included in the synopsis along with the two which properly belong there.

A. Size large (wing 3.90 or more); side of rump with a conspicuous tuft of white cottony feathers.

1. **C. borealis.** Above brownish slaty darker on the head; beneath white medially, dark grayish, in marked contrast, laterally. Wing, 3.90-4.50; tail, 2.90-3.50.

B. Size small (wing 3.60 or less); sides of rump without conspicuous cottony tuft.

2. **C. virens.** Above olive-slaty, the head darker; sides olive-grayish, this color almost meeting across the breast; throat and abdomen whitish. Wing, 3.30–3.40; tail, 2.80–3.00.

3. **C. richardsonii.** Colors of *C. virens*, but breast uniform grayish, and upper parts with less of an olive tinge. Wing, 3.25–3.60; tail, 2.80–3.20.

Contopus borealis (Swains.)

OLIVE-SIDED FLYCATCHER.

Tyrannus borealis Sw. F. B.-A. ii, 1831, 141, pl. 35.

Contopus borealis Baird, B. N. Am. 1858, 188; Cat. N. Am. B. 1859, No. 137.—Coues, Key, 1872, 173; Check List, 1874, No. 253; 2d ed. 1882, No. 380; B. N. W. 1874, 243.—B. B. & R. Hist. N. Am. B. ii, 1874, 353, pl. 44, fig. 1.—Ridgw. Nom. N. Am. B. 1881, No. 318.

Muscicapa inornata "Coop. & Nutt.," Nutt. Man. i, 1832, 285.

Muscicapa cooperi Nutt. Man. i, 1832, 282.—Aud. Orn. Biog. ii, 1834, 422; pl. 174; Synop. 1839, 41; B. Am. i, 1840, 212, pl. 58.

Tyrannus cooperi Bp. 1838.—Nutt. Man. 2d ed. i, 1840, 298.

Hab. Whole of temperate North America, but colder regions only in summer, breeding from northern border of the United States northward, farther south on higher mountain ranges, especially westward; also breeding in more elevated districts of Mexico, and migrating south as far as Veragua.

"Sp. Char. Wings long, much pointed; the second quill longest; the first longer than the third. Tail deeply forked. Tarsi short. The upper parts ashy brown, showing darker brown centres of the feathers; this is eminently the case on the top of the head; the sides of the head and neck, of the breast and body, resembling the back, but with the edges of the feathers tinged with gray, leaving a darker central streak. The chin, throat, narrow line down the middle of the breast and body, abdomen, and lower tail-coverts white or sometimes with a faint tinge of yellow. The lower tail-coverts somewhat streaked with brown in the centre. On each side of the rump, generally concealed by the wings, is an elongated bunch of white silky feathers. The wings and tail very dark brown, the former with the edges of the secondaries and tertials edged with dull white. The lower wing-coverts and axillaries grayish brown. The tips of the primaries and tail-feathers rather paler. Feet and upper mandible black, lower mandible brown. The young of the year similar, but the color duller; edges of wing-feathers dull rusty instead of grayish white. The feet light brown. Length, 7.50; wing, 4.33; tail, 3.30; tarsus, .60." (*Hist. N. Am. B.*)

The Olive-sided Flycatcher is confined almost exclusively to the northern coniferous forests, including their southern extension along the higher mountain ranges, the principal of which it follows through Mexico and Guatemala. Regarding its occurrence in Illinois, the only knowledge we have is Mr. Nelson's note (*Bull. Essex Inst.* VIII. 1876, p. 113), to the following effect:

"Not an uncommon migrant, from May 15th to 25th and the last of September and the first of October. I have taken one specimen as late as June 2d. It may breed."

Contopus virens (Linn.)

WOOD PEWEE.

Muscicapa virens Linn. S. N. ed. 12, i, 1766, 327.—Nutt. Man. i, 1832, 285.—Aud. Orn. Biog. ii, 1834, 93; v, 1839, 425, pl. 115; Synop. 1839, 42; B. Am. i, 1840, 231, pl. 64.

Tyrannus virens Nutt. Man. 2d ed. i, 1840, 316.

Contopus virens Cab. 1855.—Baird, B. N. Am. 1858, 190; Cat. N. Am. B. 1859, No. 139.—Coues, Key, 1872, 173; Check List, 1874, No. 255; 2d ed. 1882, No. 382; B. N. W. 1874, 245.—B. B. & R. Hist. N. Am. B. ii, 1874, 357, pl. 44, fig. 3.—Ridgw. Nom. N. Am. B. 1881, No. 320.

Muscicapa rapax Wils. Am. Orn. ii, 1811, 81, pl. 13, fig. 5.

Hab. Eastern United States and British Provinces, west to edge of the Great Plains, breeding throughout. In winter, eastern Mexico, and Central America, south to Guatemala. (Said by Audubon to winter in Louisiana and Florida, but this statement is unconfirmed by later observers.)

"Sp. Char. The second quill longest; the third a little shorter; the first shorter than the fourth. The latter nearly .40 longer than the fifth. The primaries more than an inch longer than the secondaries. The upper parts, sides of the head, neck, and breast, dark olivaceous brown, the latter rather paler, the head darker. A narrow white ring round the eye. The lower parts pale yellowish, deepest on the abdomen; across the breast tinged with ash. The pale ash sometimes occupies the whole of the breast, and even occasionally extends to the chin. It is also sometimes glossed with olivaceous. The wings and tail dark brown; generally deeper than in *S. fuscus*. Two narrow bands across the wing, the outer edge of the first primary and the secondaries and tertials, dull white. The edge of the tail-feathers like the back; the outer one scarcely lighter. Upper mandible black; the lower yellow, but brown at the tip. Length, 6.15; wing, 3.50; tail, 3.05.

"A large series shows considerable variations; autumnal specimens have a more appreciable tinge of yellow on the lower parts, while summer individuals are more grayish." (*Hist. N. Am. B.*)

Modest and retiring in its habits, plain in dress, and quiet in manner, this little bird, although one of the most abundant species, is by no means well known. If noticed at all, it is generally confounded with the common Pewee (*Sayornis phœbe*); but a little observation is sufficient to show how very distinct they are. The Wood Pewee will sit almost motionless for many minutes, in an erect position, on some dead twig or other prominent perch, patiently watching for its insect prey. While is position is apparently so fixed, however, its eyes are constantly on the alert, and close watching will show that the bird now and then turns its head as its glance follows the course of some distant insect, while anon the feathers of the crown are raised, so as to form a sort of blunt pyramidal crest. This sentinel-like attitude of the *Contopus* is in marked contrast to the restless motion of *Sayornis*, who, even if perched, keeps its tail constantly in motion, while the bird itself seldom remains long in a fixed position. The notes of the two

species are as different as their habits, those of the Wood Pewee being peculiarly plaintive,—a sort of wailing *p-e-e-e-e-i, wee,* the first syllable emphasized and long drawn out, and the tone a clear, plaintive wiry whistle, strikingly different from the cheerful, emphatic notes of the true Pewee. Says Dr. Brewer (*Hist. N. Am. B.*, Vol. II., p. 358):

"This species, like all its family, is a very expert catcher of insects, even the most minute, and has a wonderful quick perception of their near presence, even when the light of day has nearly gone and in the deep gloom of the thick woods. It takes its station at the end of a low dead limb, from which it darts out in quest of insects, sometimes for a single individual, which it seizes with a peculiar snap of its bill; and, frequently meeting insect after insect, it keeps up a constant snapping sound as it passes on, and finally returns to its post to resume its watch. During this watch it occasionally is heard to twitter, with a quivering movement of the wings and tail, and more rarely to enunciate a louder but still feeble call-note, sounding like 'péê-é.'"

The nest of this species, which is always "saddled" and securely attached to a rather stout branch, usually lichen-covered, is one of the most elegant examples of bird architecture. From beneath, it usually so much resembles a natural protuberance of a branch, or knotty excrescence, that but for its betrayal by the owner it would seldom be discovered. It is a very compact saucer-shaped structure, with thick walls, and the whole exterior is a beautiful "mosaic" of green, gray, and glaucous lichens. The eggs themselves are extremely handsome, having a rich but delicate cream-colored ground, and ornamented by a "wreath" round the larger end of rich madder-brown, purple, and lilac spots.

Genus **EMPIDONAX** Cabanis.

Empidonax Cabanis, Journal für Ornithologie, iii, Nov. 1855, 480. Type, *Tyrannula pusilla* Swains.

"Gen. Char. Tarsus lengthened, considerably longer than the bill, and exceeding the middle toe, which is decidedly longer than the hind toe. Bill variable. Tail very slightly forked, even, or rounded; a little shorter only than the wings, which are considerably rounded; the first primary much shorter than the fourth. Head moderately crested. Color olivaceous above, yellowish beneath; throat generally gray.

"The lengthened tarsi, the short toes, the short and rounded wings, and the plain dull olivaceous of the plumage, readily distinguish the species of this genus from any other North American Flycatchers. The upper plates of the tarsi in a good many species do not encircle the outside, but meet there a row on the posterior face." (*Hist. N. Am. B.*)

The following species occur, more or less abundantly, throughout the State:

A. Tail emarginated.

1. **E. flaviventris.** Above olive-green, beneath light greenish yellow, shaded with olive across the breast. Wing, 2.45–2.75; tail, 2.30–2.55.
2. **E. minimus.** Above olive-gray, beneath whitish, slightly shaded with gray across the breast. Wing-bands grayish white. Wing, 2.25–2.65; tail, 2.25–2.50; bill, from nostril, .28–.30; width at base, .22–.25.

B. Tail even or slightly rounded.

3. **E. pusillus traillii.** Above brownish olive, or grayish olive-brown, beneath white, the sides of the breast strongly shaded with the color of the back, the flanks and crissum tinged with sulphur-yellow. Wing-bands dull grayish, or brownish gray. Wing, 2.60–2.90; tail, 2.45–2.75.
4. **E. acadicus.** Above grayish green, or greenish gray, beneath white, shaded with olive on sides of breast. Wing-bands buffy white, or pale buff. *Young transversely mottled above.* Wing, 2.80–3.15; tail, 2.50–2.85.

Empidonax flaviventris Baird.

YELLOW-BELLIED FLYCATCHER.

Tyrannula flaviventris Wm. M. & S. F. Baird, Pr. Phil. Ac. i, 1843, 283.
Muscicapa flaviventris Aud. B. Am. vii, 1844, 341, pl. 490.
Empidonax flaviventris Baird, B. N. Am. 1858, 198; Cat. N. Am. B. 1859, No. 144.—Coues Key, 1872, 175; Check List, 1874, No. 259; 2d ed. 1882, No. 388; B. N. W. 1874, 255.—B. B. & R. Hist. N. Am. B. ii, 1874, 378, pl. 44, fig. 12.—Ridgw. Nom. N. Am. B. 1881, No. 322.

Hab. Eastern North America, breeding from northern border of United States northward (for an undetermined distance); in winter, eastern Mexico, and south to Colombia. Accidental in Greenland. (Replaced in western United States by an allied, but apparently distinct species, the *E. difficilis* Baird.)

"Sp. Char. Second, third and fourth quills nearly equal; first intermediate between fifth and sixth. Tail nearly even, slightly rounded. Tarsi long. Above bright olive-green (back very similar to that of *Vireo noveboracensis*); crown rather darker. A broad yellow ring around the eye. The sides of the head, neck, breast and body, and a band across the breast, like the back, but lighter; the rest of the lower parts bright greenish sulphur-yellow; no white or ashy anywhere on the body. Quills dark brown; two bands on the wing formed by the tips of the middle and secondary coverts, the outer edge of the first primary and of the secondaries and tertials pale yellow, or greenish yellow. The tail-feathers brown, with the exterior edges like the back. The bill dark brown above, yellow beneath. The feet black. In the autumn the colors are purer, the yellow is deeper, and the markings on the wings of an ochrey tint. Length, 5.15; wing, 2.83; tail, 2.45." (*Hist. N. Am. B.*)

"*First plumage:* male. Above uniform yellowish olive. Beneath dull yellow, with a brownish cast, tinged strongly with olive upon the throat, breast and sides. Wing-bands brownish yellow. Altogether very similar to the adult. From a specimen in my collection shot at Upton, Me, August 4, 1874." (Brewster, Bull. Nutt. Orn. Club, Oct. 1876, p. 178.)

This inconspicuous bird is known in Illinois only as a migrant, but it may possibly breed in the extreme northern portion of the State, since it has been found by Dr. Hoy to be a summer resident in the vicinity of Racine, Wisconsin. In its habits it is essentially similar to other species of the genus, though in the position and composition of its nest it differs from all except its western representative, *E. difficilis* Baird. The nest is bulky, made largely of moss and soft materials, and is placed often in some cavity of an old log or stump, near the ground. The eggs, like those of *E. acadicus* and *E. traillii*, are spotted.

Empidonax minimus Baird.

LEAST FLYCATCHER.

Muscicapa acadica "Gm." Nutt. Man. i, 1832, 288 (*nec* Gmel.).
Tyrannula minima Wm. M. & S. F. Baird, Pr. Phil. Academy, i, 1843, 284.
Muscicapa minima Aud. B. N. Am. vii, 1844, 343, pl. 491.
Empidonax minimus Baird, B. N. Am. 1858, 195; Cat. N. Am. B. 1859, No. 142.—Coues, Key, 1872, 175; Check List, 1874, No. 258; 2d ed. 1882, No. 377; B. N. W. 1874, 254.—B. B. & R. Hist. N. Am. B. ii, 1874, 372 pl. 44, figs. 10.—Ridgw. Nom. N. Am. B. 1881, No. 326.

Hab. Eastern North America, breeding from northern border of United States north to subarctic districts; west regularly to border of Great Plains, irregularly to base of Rocky Mountains. In winter, eastern Mexico, Guatemala and Honduras.

"Sp. Char. Second quill longest; third and fourth but little shorter; fifth a little less; first intermediate between fifth and sixth. Tail even. Above olive-brown, darker on the head, becoming paler on the rump and upper tail-coverts. The middle of the back most strongly olivaceous. The nape (in some individuals) and sides of the head tinged with ash. A ring around the eye and some of the loral feathers white; the chin and throat white. The sides of the throat and across the breast dull ash, the color on the latter sometimes nearly obsolete; sides of the breast similar to the back, but of a lighter tint; middle of the belly very pale yellowish white, turning to pale sulphur-yellow on the sides of the belly, abdomen, and lower tail-coverts. Wings brown; two narrow white bands on the wing, formed by the tips of the first and second coverts, succeeded by one of brown. The edge of the first primary, and of the secondaries and tertials, white. Tail rather lighter brown, edged externally like the back. Feathers narrow, not acuminate, with the ends rather blunt. In autumn the white parts are strongly tinged with yellow. Length, about 5.00; wing, 2.65; tail, 2.50. Young with ochraceous, instead of grayish-white wing-bands." (*Hist. N. Am. B.*)

"*First plumage:* male. Similar to the adult, but with a stronger olive cast, and a faintly indicated collar of ashy brown across the nape. Wing-bands light reddish brown. Beneath almost precisely similar to the adult, with perhaps a slightly stronger yellowish cast upon the abdomen and crissum. Distinguishable from *E. traillii* and *E. acadicus* in corresponding stages by the decidedly paler and less yellowish under parts; especially by the nearly clear ashy on the sides of the breast. From a specimen in my collection taken at Cambridge, Mass., July 2, 1872. Other specimens in first plumage before me differ little from the one above described, but *autumnal specimens*, singularly enough, are much yellower below and more olivaceous above." (Brewster, Bull. Nutt. Orn. Club, Oct. 1878, p. 178.)

This retiring little bird, like its congeners, has nothing in its habits to bring it into general notice. It is therefore almost wholly un-

known except to the ornithologist. In Illinois it is a summer resident in the northern portions and a migrant southward; but the southern limit of its breeding range is at present unknown.

Empidonax pusillus traillii (Aud.)

TRAILL'S FLYCATCHER.

Muscicapa traillii Aud. Orn. Biog. i, 1832, 236; v, 1839, 426, pl. 45; Synop. 1839, 43; B. Am. i, 1840, 234, pl. 65.

Tyrannus traillii Nutt. Man. 2d ed. i, 1840, 323.

Empidonax traillii Baird, B. N. Am. 1858, 193; Cat. N. Am. B. 1859, No. 140.—Coues, Key, 1872, 175; Check List 1874. No. 257; B. N. W. 1874, 252.

Empidonax pusillus var. *traillii* B. B. & R. Hist. N. Am. B. ii, 1874, 369, pl. 44, fig. 8.

Empidonax pusillus traillii Ridgw. Nom. N. Am. B. 1881, No. 325 *a*.—Coues, 2d Check List, 1882, No. 385.

Hab. Eastern North America, breeding from Missouri, Illinois, Ohio, and New England northward (for an undetermined distance); wintering in eastern Middle America, south to Colombia.

"Sp. Char. Third quill longest; second scarcely shorter than fourth; first shorter than fifth, about .35 shorter than the longest. Primaries about .75 of an inch longer than secondaries. Tail even. Upper parts dark olive-green; lighter under the wings, and duller and more tinged with ash on nape and sides of the neck. Centre of the crown-feathers brown. A pale yellowish white ring (in some specimens altogether white) round the eye. Loral feathers mixed with white. Chin and throat white; the breast and sides of throat light ash tinged with olive, its intensity varying in individuals, the former sometimes faintly tinged with olive. Sides of the breast much like the back. Middle of the belly nearly white; sides of the belly, abdomen, and the lower tail-coverts, sulphur-yellow. The quills and tail-feathers dark brown, as dark (if not more so) as these parts in *C. virens*. Two olivaceous yellow-white bands on the wing, formed by the tips of the first and second coverts, succeeded by a brown one; the edge of the first primary and of secondaries and tertials a little lighter shade of the same. The outer edge of the tail-feathers like the back; that of the lateral one rather lighter. Bill above dark brown; dull brownish beneath. Length, nearly 6.00; wing, 2.90; tail, 2.60. *Young* with the wing-bands ochraceous instead of grayish olive.

"This species is most closely related to *E. minimus*, but differs in larger size and the proportions of quills. The middle of the back is the same color in both, but instead of becoming lighter and tinged with ash on the rump and upper tail-coverts, these parts very rarely differ in color from the back. The markings on the wings, instead of being dirty white, are decidedly olivaceous grayish. The yellow of the lower parts is deeper. The tail-feathers are rather broad, acuminate, and pointed; in *minimus* they are narrow and more rounded, while the tail itself is emarginated, instead of square, as in the present bird. The bill is larger and fuller. The legs are decidedly shorter in proportion." (*Hist. N. Am. B.*)

Although less numerous than the Acadian Flycatcher, at least in the southern part of the State, Traill's Flycatcher is not an uncommon summer resident. In general habits it so much resembles the species named as to be undistinguishable except by the critical observer. The two are often found in the same localities, but Traill's Flycatcher is of a more familiar disposition, and may often be found in close proximity to dwellings, especially in orchards, while the other is seldom seen in such places.

Empidonax acadicus (Gmel.)

ACADIAN FLYCATCHER.

Popular synonym. Green-crested Flycatcher.

Muscicapa acadica GMEL. S. N. i, 1788, 947.—AUD. Orn. Biog. ii, 1834, 256; v, 1839, 429, pl. 144; Synop. 1839, 42; B. Am. i, 1840, 221, pl. 62.

Empidonax acadicus BAIRD, B. N. Am. 1858, 197; Cat. N. Am. B. 1859, No. 143.—COUES, Key, 1872, 174; List, 1874, No. 256; 2d ed. 1882, No. 384; B. N. W. 1874, 249.—B. B. & R. Hist. N. Am. B. ii, 1874, 374, pl. 44, fig. 11.—RIDGW. Nom. N. Am. B. 1881, No. 324.

Muscicapa querula "VIEILL." WILS. Am. Orn. ii, 1810, 77, pl. 13, fig. 3 (*nec* VIEILL.).

HAB. Eastern United States, breeding nearly throughout, but rare in New England, where scarcely found beyond the Connecticut valley; north, in the interior, to Canada West. In winter, Cuba and Yucatan, possibly Gulf States also.

"SP. CHAR. The second and third quills are longest, and about equal; the fourth a little shorter; the first about equal to the fifth, and about .35 less than the longest. Tail even. The upper parts, with sides of the head and neck, olive-green; the crown very little if any darker. A yellowish white ring round the eye. The sides of the body under the wings like the back, but fainter olive; a tinge of the same across the breast; the chin, throat, and middle of the belly white; the abdomen, lower tail and wing-coverts, and sides of the body not covered by the wings, pale greenish yellow. Edges of the first primary, secondaries and tertials margined with dull yellowish white, most broadly on the latter. Two transverse bands of pale yellowish (sometimes with an ochrey tinge) across the wings, formed by the tips of the secondary and middle coverts, succeeded by a brown one. Tail light brown, margined externally like the back. Upper mandible light brown above; pale yellow beneath. In autumn the lower parts are more yellow. Length, 5.65; wings, 3.00; tail, 2.75. *Young* (60892, Mt. Carmel, Ill., August 11, 1870; R. RIDGWAY): Whole upper surface with indistinct transverse bars of pale ochraceous; wing-markings light ochraceous.

This species is very similar to *E. traillii*, but the upper parts are of a brighter and more uniform olive-green, much like that of *Vireo olivaceus*. The feathers of the crown lack the darker centre. There is less of the olivaceous ash across the breast. The bands across the wing are light yellowish, instead of grayish olive. There is much more yellow at the base of the lesser quills. The wings are longer, both proportionally and absolutely. The primaries ex-

ceed the secondaries by nearly an inch, instead of by only about .70; the proportions of the quills are much the same." (*Hist. N. Am. B.*)

This is probably the most numerous and generally distributed species of the genus in the State. It occurs as a summer resident, in all damp woodlands, but may easily pass unnoticed by the casual observer.

Order **MACROCHIRES**.—The Goatsuckers, Swifts, and Hummingbirds.

Characters. Wings much lengthened, with 10 primaries; tail-feathers, 10; gape very wide and deeply cleft, or else, (*i. e.*, Sub-order *Trochili*), bill long and slender, the tongue extensile, and secondaries only six in number.

Following is an analysis of the Families which have usually been assigned to this Order. It may be remarked that the *Trochilidæ* possess very special characters which in the opinion of some systematists entitle them to rank as a distinct Order (*Trochili*). The *Trochilidæ* and *Micropodidæ* being very much more nearly related than either of these groups are to the *Caprimulgidæ*, it is obvious that the so-called "Order Macrochires" is a decidedly artificial group.

A. Secondaries more than 6; bill short, very broad at base, the gape deeply cleft; plumage not metallic.

a. Middle toe much longer than lateral toes, its claw with inner edge pectinated; gape distinctly bristled; plumage much spotted and otherwise varied, the feathers soft, with downy or moth-like surface. (Sub-order *Caprimulgi.*).. **Caprimulgidæ.**

b. Middle toe not distinctly longer than lateral toes, its claws without pectinated edge; gape without bristles; plumage plain and compact. (Suborder *Cypseli.*) **Micropodidæ.**

B. Secondaries only 6; bill long as head, or longer, slender, the gape not deeply cleft, plumage more or less metallic; size diminutive. (Suborder *Trochili.*).. **Trochilidæ.**

Family **TROCHILIDÆ**.—The Hummingbirds.

Char. Size variable, but usually the smallest of birds. Bill subulate, but very variable as to length; usually longer than the head, and generally straight, but occasionally curved or even (in two genera) recurved. Feet exceedingly small and weak, the tarsus not longer than the middle toe; claws well curved, sharp. Tail of ten feathers, exceedingly variable as to shape. Wing Swift-like, with exceedingly short secondaries and strongly developed primaries; the latter ten; of which the first is longest, except in a single genus (*Aithurus*); secondaries six. Plumage, variable, but usually adorned with brilliant metallic tints, especially in the males.

The range of variation in the details of form, size, and other attributes among the four hundred and fifty known species of this remarkable family is something wonderful, and it is therefore difficult to frame a diagnosis which shall express in few words the exclusive characters of the family as a whole. Many species are no larger than a common "Bumble Bee," but the largest is fully equal to our Chimney Swift (*Chætura pelagica*) in size. One species has the bill only a quarter of an inch in length, while in another this member is developed to the enormous length of three and a quarter to four and a quarter inches, or more than the combined length of the head, neck, body, and tail of the bird itself. In the genera *Avocettula* and *Avocettinus* the bill is recurved terminally; but in *Eutoxeres* it has exactly a sickle-shape. The form and relative development of the rectrices vary to such an extraordinary degree that a whole chapter might be devoted to this topic alone; but here it will suffice to refer to this part of the subject briefly: In the genera *Cynanthus* and *Sappho* the lateral rectrices are greatly lengthened, with broad and rounded ends; the rest gradually shorter to the middle pair, which are only one fourth to one fifth of the length of the outer pair. The tail is therefore deeply forficate, and when spread is V-shaped. In the adult males the tail feathers glow with the most brilliantly burnished metallic hues—green blue and violet in *Cynanthus*, fiery red and crimson in *Sappho*—the color varying with the species. In *Steganura* and *Discura* the lateral rectrices are greatly elongated, gradually narrowed toward the end

until the webs are almost or completely gone, and then suddenly expanded into a broad paddle-shaped tip. In *Heliactin* the tail is lengthened and greatly graduated, being, in fact, shaped very much as in the common Mourning Dove (*Zenaidura carolinensis*) or Wild Pigeon (*Ectopistes migratoria*). But the most wonderful form of all is to be seen in the *Loddigesia mirabilis*, in which two of the rectrices consist of simple bare shafts which extend for some three inches beyond the tips of the coverts, and bear at their ends a broad leaf-shaped paddle more than an inch in length and nearly as much in breadth. Other genera have the rectrices needle-shaped, club-shaped, etc., while the majority have the tail composed of feathers not remarkable for any peculiarity of form.

"The bill of the Hummingbird is awl-shaped or subulate; thin, and sharp-pointed; straight or curved; sometimes as long as the head, sometimes much longer. The mandibles are excavated to the tip for the lodgment of the tongue, and form a tube by the close apposition of their cutting edges. There is no indication of stiff, bristly feathers at the base of the mouth. The tongue has some resemblance to that of the Woodpeckers in the elongation of the cornua backwards, so as to pass around the back of the skull, and then anteriorly to the base of the bill. The tongue itself is of very peculiar structure, consisting anteriorly of two hollow threads closed at the ends and united behind. The food of the Hummingbirds consists almost entirely of insects, which are captured by protruding the tongue in flowers of various shapes without opening the bill very wide." (*Hist. N. Am. B.*)

The Hummingbirds, more than any other family, constitute the most remarkable feature of the New World bird-life. They have absolutely no representatives in any other part of the world, the Swifts being the nearest relatives they have in other countries.

Hummingbirds abound most in mountainous countries, where the configuration of the surface and productions of the soil are most diversified within small areas. Their centre of abundance is among the northern Andes, between the parallels of 10°, on each side of the equator, from which region they gradually diminish in numbers both to the northward and southward, but much more rapidly toward the extensive lowlands of the eastern portion of the continent. Their northern limit of abundance may be approximately given as the Tropic of Cancer, beyond with but few of forty-six or more Mexican species extend, while only thirteen of them have been detected across the boundary line in the equally

mountainous portions of the southwestern United States, including the semi-tropical Rio Grande valley. Small as this number may appear, the southwestern portion of the Union may be considered richly represented when compared with the vast valley of the Mississippi and the Atlantic water-shed—a region of unsurpassed fertility and luxuriant vegetation, yet which throughout its whole extent, even including the peninsula of Florida, possesses only a single species. In this scarcity, compared with the western mountainous regions, of representatives of a numerous family of birds, we see a certain parallelism with the lowlands of eastern South America as compared with the Andean highlands, only, on account of climatic differences, the contrast is more marked.

We have therefore to consider but a single genus or species of Hummingbird in the present work, none of the western species coming sufficiently near to render their occurrence in the least probable.

Genus **TROCHILUS** Linnæus.

Trochilus Linnæus, Systema Natura, ed. 10, i, 1758, 119. Type (by elimination) *T. colubris* Linn.

Gen. Char. Male with the metallic gorget of the throat nearly even all round. Tail forked; the feathers lanceolate, acute, becoming gradually narrower from the central to the exterior. Inner six primaries abruptly and considerably smaller than the outer four, and with the inner web notched at the end.

The female has the outer tail-feathers somewhat lanceolate, as in the male, though much broader. They are broad to the terminal third, where they become rapidly pointed, the tip only somewhat rounded; the sides of this attenuated portion (one or the other, or both) broadly and concavely emarginated, which distinguishes them from the females of *Selasphorus* and *Calypte*, in which the tail-feathers are broadly linear to near the end, which is much rounder and without any distinct concavity.

Trochilus colubris Linn.

RUBY-THROATED HUMMINGBIRD.

Trochilus colubris Linn. S. N. ed. 10, i, 1758, 120.—Wils. Am. Orn. ii, 1810, 26, pl. 10, figs. 3, 4.—Nutt. Man. i, 1832 588.—Aud. Orn. Biog. i, 1832, 248; v 1839, 544, pl. 47; Synop. 1839, 170; B. Am. iv. 1842, 190, pl. 253.—Baird, B. N. Am. 1858 131; Cat. N. Am. B. 1859, No. 101.—Coues, Key, 1872, 184; Check List, 1874, No. 275; 2d ed. 1882, No. 410; B. N. W. 1874, 271.—B. B. & R. Hist. N. Am. B. ii, 1874, 448, pl. 48, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 335.

HAB. Eastern North America, north to 57° in the interior; in winter, Cuba, Bahamas, eastern Mexico, and Central America, south to Veragua; also Bermudas.

"SP. CHAR. Tail in the male deeply forked: the feathers all narrow lanceolate-acute. In the female slightly rounded and emarginate; the feathers broader, though pointed. Male, uniform metallic green above; a ruby-red gorget (blackish near the bill); with no conspicuous ruff; a white collar on the jugulum; sides of body greenish; tail-feathers uniformly brownish violet. *Female*, without the red on the throat; the tail rounded and emarginate, the inner feathers shorter than the outer; the tail-feathers banded with black, and the outer tipped with white; no rufous or cinnamon on the tail in either sex. Length, 3.25; wing, 1.60; tail, 1.25. *Young* males are like the females; the throat usually spotted, sometimes with red; the tail is, in shape, more like that of the old male." (*Hist. N. Am. B.*)

Little need be said as to the habits of the well-known Hummingbird. Its distribution is general over every portion of the State—or indeed over every portion of the continent from the Great Plains to the Atlantic coast and from Canada to the Gulf of Mexico. Arriving among us when spring has fairly come, and departing just before the first autumnal frosts, these little birds traverse a distance in their migrations that appears almost impossible to creatures so minute, many individuals making their winter homes as far south as Veragua, in the State of New Granada, immediately north of the Isthmus of Panama.

When captured, the Hummingbird becomes in a short time so tame as to sit confidingly on one's finger and sip syrup (best made of white sugar dissolved in warm water) from a saucer, but on account of its delicate organization and susceptibility to cold, attempts to keep it in confinement during winter have failed. The late Mr. John Gould, author and publisher of the most magnificently illustrated bird-books ever produced—probably the finest of them being a monograph of the Hummingbirds—succeeded in taking several specimens across the Atlantic to England; but they died almost immediately after their arrival in that country.

Family MICROPODIDÆ.—The Swifts.

"Char. Bill very small, without notch, triangular, much broader than high; the culmen one sixth the gape. Anterior toes cleft to the base, each with three joints (in the typical species), and covered with skin or feathers; the middle claw without any serrations; the lateral toes nearly equal to the middle. Bill without bristles, but without minute feathers extending along the under margin of the nostrils. Tail feathers ten. Nostrils elongated, superior and very close together. Plumage compact. Primaries ten, elongated, falcate.

The *Micropodidæ* (formerly *Cypselidæ*), or Swifts, "are Swallow-like birds, generally of rather dull plumage and medium size. They were formerly associated with the true Swallows on account of their small, deeply cleft bill, wide gape, short feet, and long wings, but are very different in all the essentials of structure, belonging, indeed, to a very different order or suborder. The bill is much smaller and shorter; the edges greatly inflected; the nostrils superior, instead of lateral, and without bristles. The wing is more falcate, with ten primaries instead of nine. The tail has ten feathers instead of twelve. The feet are weaker, without distinct scutellæ; the hind toe is more or less versatile, the anterior toes frequently lack the normal number of joints, and there are other features which clearly justify the wide separation here given especially the difference in the vocal organs. Strange as the statement may appear, their nearest relatives are the *Trochilidæ*, or Hummingbirds, notwithstanding the bills of the two are as opposite in shape as can readily be conceived." (*Hist. N. Am. B.*)

The Swifts are as poorly represented in eastern North America as the Hummingbirds, only a single species (the common Chimney Swift, *Chætura pelagica*), occuring east of the Rocky Mountains. The family is of cosmopolitan range, species occurring in nearly all parts of the world.

Genus CHÆTURA Stephens.

Chætura Stephens, Shaw's Gen. Zoöl., Birds, xiii, ii, 1825, 76. Type *Hirundo pelagica* Linn.

"Gen. Char. Tail very short, scarcely more than two fifths the wings; slightly rounded; the shafts stiffened and extending some beyond the feathers in a rigid spine.

First primary longest. Legs covered by the naked skin, without scutellæ or feathers. Tarsus longer than middle toe. Lateral toes equal, nearly as long as the middle. Hind toe scarcely versatile, or quite posterior; including claw, less than the middle anterior without it. Toes slender; claws moderate. Feathers of the base of the bill not extending beyond the beginning of the nostrils." (*Hist. N. Am. B.*)

This genus has numerous representatives in tropical America, while in the western United States, especially the Pacific coast, occurs the *C. vauxii* (Towns.), a species allied to but quite distinct from the *C. pelagica*.

Chætura pelagica (Linn.)

CHIMNEY SWIFT.

Popular synonyms. Chimney Swallow; Chimney Sweep.

Hirundo pelagica Linn. S. N. ed. 10, i, 1758, 192.
Chætura pelagica B. B. & R. Hist. N. Am. B. ii, 1874, 432, pl. 45, fig. 7.—Coues, B. N. W. 1874, 267.
Hirundo pelasgia Linn. S. N. ed. 12, i, 1766, 345.—Wils. Am. Orn. v, 1812, 48, pl. 39, fig. 1.
Cypselus pelasgius Bp. 1828.—Nutt. Man. i, 1832, 609.—Aud. Orn. Biog. ii, 1835, 329; v, 1839, 419, pl. 158.
Chætura pelasgia Steph. 1825.—Aud. Synop. 1839, 33; B. Am. i, 1840, 104, pl. 44.—Baird, B. N. Am. 1855, 144; Cat. N. Am. B. 1859, No. 109.—Coues, Key, 1872, 183; Check List, 1874, No. 271.
Chætura pelasgica Ridgw. Nom. N. Am. B. 1881, No. 351.—Coues, 2d Check List, 1882, No. 405.

Hab. Eastern United States and British Provinces. *Winter quarters unknown.*

Sp. Char. Above dark sooty grayish, paler on rump and upper tail-coverts, and with a faint greenish gloss; wings darker than back. Beneath lighter sooty gray, the chin and throat much paler. Bill black; iris brown; feet livid grayish. Total length, 5.25-5.40; extent, 12.30; wing, 5.00-5.20; tail, 1.90-2.15.

This Swift, the only species inhabiting eastern North America, is abundant throughout the country, and its general habits are so well known as to make special mention of them in this connection superfluous. One interesting fact connected with the Chimney Swift may however be alluded to, viz., the circumstance that its winter home is absolutely unknown to ornithologists. No specimens taken at any locality south of the Gulf coast have been recorded, while no one seems to have ever seen one anywhere in the United States in winter. It has been asserted by some writers that it passes the winter in a state of inanition or torpidity, many hundreds or thousands of them hibernating together, like bats, in hollow trees. But this statement requires verification. Chimney Swifts are, however, exceedingly gregarious except when nesting, it being a common sight, in nearly all parts of the coun-

try to see at evening dense swarms, consisting of thousands of individuals, descending into unused chimneys, to roost during the night. Indeed, so many thus congregate together within a comparatively limited space that they must certainly cling fast to one another like bees when "swarming." The following description of a "swallow tree" in the northern part of the State is clipped from the *Chicago Times:*

"Among the attractions at Grand Lodge is a 'swallow tree,' which stands on the shore directly in front of the Island House. The swallows commence to assemble about 7:30 p. m., forming a circle around the top of the tree until three or four thousand have arrived, and then rapidly disappear beneath the foliage. The tree is a sycamore, is hollow its entire length, and has been inhabited by swallows for nine successive years, the visitors not varying four days in the date of their arrival; viz., from the twenty-fourth to the twenty-ninth of April. They leave their resting place every morning at sunrise, and take their final departure when frost comes."

Before the country became thickly settled, the "Chimney Swallow" nested habitually in hollow trees, especially sycamores, having a large hollow trunk, opening, like a chimney, at the top. The writer has found nests thus situated at Mount Carmel, and at the same place discovered another glued to the inside of an outbuilding built of upright planks.

Family CAPRIMULGIDÆ.—The Goatsuckers.

Char. Bill very short; the gape enormously long and wide, opening to beneath or behind the eyes. Culmen variable. Toes connected at base by a movable skin; secondaries lengthened; plumage soft, sometimes very full and loose, as in the Owls.

The above brief diagnosis is sufficient to distinguish this family from all others in North America, especially when taken in connection with that given on page 358.

The North America genera are distinguished by the following characters:

A. Gape with conspicuous bristles; tail even or rounded.
- *a.* Tarsus feathered in front almost to the toes, and shorter than the middle toe. First quill longer than the fourth.
  - 1. **Antrostomus.** Tail rounded, shorter than the wing.
- *b.* Tarsus entirely naked in front, and longer than the middle toe. First quill shorter than the fourth.
  - 2. **Phalænoptilus.** Tail even and much shorter than the wing. Plumage with a peculiarly soft, velvety surface. Sexes with the tail not differently marked.
  - 3. **Nyctidromus.** Tail rounded, long as the wing. Sexes with the tail very differently marked.

B. Gape without conspicuous bristles; tail emarginated or slightly forked.
- 4. **Chordeiles.**

Genus ANTROSTOMUS Gould.

Antrostomus Gould, Icones Avium, 1838. Type, *Caprimulgus carolinensis* Gm.

Gen. Char. Bill very small, with tubular nostrils, and the gape with long, stiff, sometimes pectinated bristles projecting beyond the end of the bill. Tarsi shorter than middle toe, chiefly feathered. Tail broad, rounded; wings broad and rounded; first quill shorter than third, but longer than the fourth; plumage soft and lax. Habits nocturnal.

The two North American species, both of which occur in Illinois, may be distinguished as follows:

A. Rictal bristles with lateral filaments. Wing more than 8 inches.
- 1. **A. carolinensis.** *Male.* Terminal half or third of inner webs of three outer tail-feathers buffy whitish or ochraceous. *Female.* Outer tail-feathers without light tips.

B. Rictal bristles without lateral filaments. Wing less than 7 inches.
- 2. **A. vociferus.** *Male.* Tail-feathers (except middle pair) with terminal third of both webs white. *Female.* Tail-feathers without white tips.

Antrostomus carolinensis (Gmel.)

CHUCK-WILL'S-WIDOW.

Popular synonym. Dutch Whip-poor-will.

Caprimulgus carolinensis GMEL. S. N. i, 1788, 1028.—WILS. Am. Orn. iv, 1811, 95, pl. 34, fig. 2.—NUTT. Man. i, 1832, 612.—AUD. Orn. Biog. i, 1832, 273; v, 1839, 401, pl. 52; Synop. 1839, 31; B. Am. i, 151, pl. 41.

Antrostomus carolinensis GOULD, Icones Avium.—BAIRD, B. N. Am. 1858, 147; Cat. N. Am. B. 1859, No. 1838.—COUES, Key, 1872, 180; Check List, 1874, No. 264; 2d ed. 1882, No. 396; B. N. W. 1874, 263.—B. B. & R. Hist. N. Am. B. ii, 1874, 410, pl. 46, fig. 1.—RIDGW. Nom. N. Am. B. 1881, No. 353.

HAB. South Atlantic and Gulf States, and lower Mississippi Valley, north to southern Illinois and Indiana; in winter, eastern Mexico and south to Costa Rica; Cuba?

SP. CHAR. Bristles of gape with lateral filaments. Above, finely mottled gray, ochraceous, tawny, and black; the pileum with broad irregular streaks of black, the scapulars with irregular blotches of the same; primaries dusky, spotted with ochraceous rufous. Lower parts mixed tawny ochraceous and grayish, vermiculated and transversely barred with dusky; the gular region and crissum with ochraceous prevailing. *Male.* Inner webs of three outer tail-feathers with terminal third, or more, white (ochraceous on lower surface). *Female.* Inner webs of outer rectrices without white. Wing, 8.70–8.90; tail, 6.26–6.30.

The Chuck-will's-widow is essentially a southern bird, the extreme northern limit of its range being the lower Wabash valley, where, as far north as Mount Carmel it is, or at least was, not uncommon. The writer has heard its easily recognized notes as far north as the then (in 1865) heavily timbered Big Creek bottoms in Richland County, about three miles south of the town of Olney. Its habits are essentially the same as those of the Whip-poor-will, and its notes are somewhat similar, but louder, and easily distinguished after once being heard.

Antrostomus vociferus (Wils.)

WHIP-POOR-WILL.

Caprimulgus vociferus WILS. Am. Orn. v, 1812, 71, pl. 41, figs. 1, 2, 3.—NUTT. Man. i, 1832, 614.—AUD. Orn. Biog. i, 1832, 443; v, 1839, 405, pl. 82; Synop. 1839, 32; B. Am. i, 1840, 155, pl. 42.—RIDGW. Nom. N. Am. B. 1881, No. 354.

Antrostomus vociferus BP. 1838.—BAIRD, B. N. Am. 1858, 148; Cat. N. Am. B. 1859, No. 112.—COUES, Key, 1872, 180; Check List, 1874, No. 265; 2d ed. 1882, No. 397; B. N. W. 1874, 260.—B. B. & R. Hist. N. Am. B. ii, 1874, 413, pl. 46, fig. 2.

HAB. Eastern United States and British Provinces, north to about 50° in the interior; winters in Gulf States, and south through eastern Mexico to Guatemala. (Replaced in Arizona and table-lands of Mexico by *A. vociferus arizonæ* Brewster.)

SP. CHAR. Bristles of gape without lateral filaments. Above finely mottled gray, brown and tawny, the gray prevailing on the pileum, which has a median series of black longitudinal blotches, with narrower streaks on each side. Scapulars blotched with black;

primaries dusky, spotted with ochraceous rufous. Beneath, mottled grayish, brown, and buff, vermiculated with black, the lower part of the throat crossed by a bar of white or ochraceous. *Adult male.* Tail-feathers (except middle pair) with terminal third (approximately) of both webs white. *Adult female.* Tail without any white, but three outer rectrices tipped with buff or ochraceous. Wing, 6.20–6.70; tail, 5.10–6.50.

Although so well known by its familiar nocturnal song, the Whip-poor-will is a bird that comparatively few people have seen. This is accounted for by its strictly nocturnal habits. Its flight, says Dr. Brewer (*Hist. N. Am. B.* Vol. II., p. 415), "is noiseless to an incredible degree," and is by no means protracted. "They are usually very shy, and are easily startled if approached. At night, as soon as the twilight disappears, these birds issue from their retreats, and fly out into more open spaces in quest of their favorite food. As many of the nocturnal insects, moths, beetles, and others, are attracted about dwellings by lights, the Whip-poor-will is frequently enticed, in pursuit, into the same vicinity. For several successive seasons these birds have appeared nearly every evening within my grounds, often within a few feet of the house. They never suffer a very near approach, but fly as soon as they notice any movement. Their pursuit of insects is somewhat different from that narrated of the preceding species, their flights being usually quite brief, without any perceptible sailing, and more in the manner of Flycatchers. Their song is given out at intervals throughout the night, until near the dawn.

"The nocturnal habits of this bird have prevented a general or accurate knowledge of its true character. Strange as it may seem, in many parts of the country the Night-Hawk and the Whip-poor-will are supposed to be one and the same bird, even by those not ill-informed in other respects."

Genus **CHORDEILES** Swainson.

Chordeiles Swainson, Fauna Bor.-Amer. ii, 1831, 337. Type, *Caprimulgus virginianus* Gmel.

Gen. Char. Bill small, the nostrils depressed; the gape with feeble, inconspicuous bristles. Wings long, narrow, and pointed, the first quill nearly or quite equal to the second. Tail rather narrow, slightly forked; plumage quite compact. Habits diurnal or crepuscular.

Many species of this genus belong to America, although but two that are well characterized enter into the fauna of the United States. These are easily distinguished as follows:

1. **C. virginianus.** Outer webs of primaries without ochraceous spots; white patch on primaries extending over five outer quills, anterior to their middle portion.

2. **C. texensis.** Outer webs of primaries more or less spotted with rufous or ochraceous; white patch on primaries extending over only four quills, and posterior to their middle portion.

Chordeiles virginianus (Gmel.)

NIGHTHAWK.

Popular synonyms. Whip-poor-will; Bull Bat; Will-o'the-wisp (Connecticut).

Caprimulgus virginianus Gm. S. N. i, 1788, 1028 (part only).—Nutt. Man. i, 1832, 619; ii, 134, 609.—Aud. Orn. Biog. ii, 1834, 273; v. 1839, 406, pl. 147.

Caprimulgus (Chordeiles) virginianus Sw. & Rich. F. B.-A. ii, 1831, 337.

Chordeiles virginianus Bp. 1838.—Aud. Synop. 1839, 32; B. Am. i, 1840, 259, pl. 43.—Coues, Key, 1872, 351; Check List, 1874, No. 267; 2d ed. 1882, No. 399; B. N. W. 1874, 263.

Caprimulgus popetue Vieill. O. A. S. i, 1807, 56, pl. 24 (female).

Chordeiles popetue Baird, B. N. Am. 1858, 151; Cat. N. Am. B. 1859, No. 114.—B. B. & R. Hist. N. Am. B. ii, 1874, 401.—Ridgw. Nom. N. Am. B. 1881, No. 357.

Caprimulgus americanus Wils. Am. Orn. v, 1812, 65, pl. 40, figs. 1, 2.

Hab. Eastern North America, north to Hudson's Bay; in winter, Bahamas, Cuba, Jamaica, and eastern tropical America to Brazil.

Sp. Char. *Male.* Above greenish black, with but little mottling on the head and back. Wing-coverts varied with grayish; scapulars with yellowish rufous. A nuchal band of fine gray mottling behind which is another coarser one of rufous spots. A white V-shaped mark on the throat; behind this a collar of pale rufous blotches, and another on the breast of grayish mottling. Under parts banded transversely with dull yellowish or reddish white and brown. Wing quills quite uniformly brown. The five outer primaries with a white blotch (about half an inch long) midway between the tip and carpal joint, not extending on the outer web of the outer quill. Tail with a terminal white patch which does not reach the outer edge of the feathers. *Female* without the caudal white patch, the white tail-bands more mottled, the white of the throat mixed with reddish. Length of male, 9.50; wing, 8.20. (*Hist. N. Am. B.*)

First plumage. Above dull black, irregularly marbled everywhere with reddish fawn-color and pale rusty. All the feathers are tipped, edged, and barred with the lighter colors, the back appearing for the most part in subterminal spots or blotches. The primaries (which are but just sprouting) are black, broadly tipped with pale rusty. Under parts clothed thickly with fluffy, whitish down, beneath which on the breast and sides, true feathers of a dull white barred with dark brown are beginning to appear. (From a specimen in the cabinet of Mr. N. C. Brown, taken at Deering, Me., June 29, 1875.) It seems probable that young of this species—and perhaps of the whole family, like those of the *Tetraonidæ* and some others—pass through a state of plumage previous to the usual primal one. The specimen above described is, strictly speaking, in process of transition between the two, and still retains patches of the soft whitish down which must have constituted its entire covering at an earlier period." (Brewster, Bull. Nutt. Orn. Club, 1876, p. 178.)

Popularly confounded with the Whip-poor-will, the Nighthawk is a bird of very different appearance and quite distinct habits. Instead of being strictly nocturnal it is hardly crepuscular, but may often be seen flying about in broad daylight, though toward evening is their favorite time of activity. Says Dr. Brewer:

"Ordinarily laying its eggs upon the bare ground, usually in some open situation, the Night Hawk has become accustomed to nest on

the flat roof-tops of houses in cities, even in such densely populated places as New York and Brooklyn. (See Louis A. Zerega, in *Forest and Stream*, Vol. XVIII., No. 24, p. 467.)

Chordeiles virginianus henryi (Cass.)

WESTERN NIGHTHAWK.

Chordeiles henryi Cass. Illustr. B. Cal. Tex. &c. 1855, 239.—Baird, B. N. Am. 1858, 153, 922; ed. 1860 17; Cat. N. Am. B. 1859, No. 115.

Chordeiles popetue var. *henryi* Allen.—B. B. & R. Hist. N. Am. B. ii, 1874, 404, pl. 46, fig. 4.

Chordeiles popetue henryi Ridgw. Nom. N. Am. B. 1881, No. 337*a*.—2d Check List, 1882, No. 400.

Chordeiles virginianus var. *henryi* Coues, Key, 1872, 181.—Check List, 1871, No. 267*a*.

Hab. Western United States (except Pacific coast north of San Francisco?).

Subsp. Char. Similar to true *C. virginianus*, but much paler and grayer, often with much buffy mottling.

This form, which is of occasional occurrence in Illinois, is in habits and notes a counterpart of the ordinary eastern bird. In the desert regions of the Great Basin the writer found it to be a common summer resident.

ORDER PICI.—THE WOODPECKERS, ETC.

CHARACTERS. Bill straight, pointed or chisel-shaped at tip; tongue barbed at point and extensile; feet zygodactyle; tail-feathers 12, but outer pair rudimentary and concealed.

FAMILY PICIDÆ.—THE WOODPECKERS.

"CHAR. Outer toe turned backwards permanently, not versatile laterally, the basal portion of the tongue capable of great protrusion.

"The preceding characters combined appear to express the essential character of the *Picidæ*. In addition, it may be stated that the tongue itself is quite small, flat, and short, acute and horny, usually armed along the edges with decurved hooks. The horns of the hyoid apparatus are generally very long, and curve round the back of the skull frequently to the base of the bill, playing in a sheath, when the tongue is thrown forward out of the mouth to transfix an insect.

"There are twelve tail-feathers, of which the outer is, however, very small and rudimentary (lying concealed between the outer and adjacent feathers), so that only ten are usually counted. The tail is nearly even, or cuneate, never forked, the shafts very rigid in the true Woodpeckers; soft in *Picumninæ* and *Junginæ*. The outer primary is generally very short, or spurious, but not wanting. The bill is chisel- or wedge-shaped, with sharp angles and ridges and straight culmen; sometimes the culmen is a little curved, in which case it is smoother, and without ridges. The tarsi in the North American forms are covered with large plates anteriorly, posteriorly with small ones, usually more or less polygonal. The claws are compressed, much curved, very strong and acute.

"The *Picidæ* are found all over the world with the exception of Madagascar, Australia, the Moluccas, and Polynesia. America is well provided with them, more than half of the described species belonging to the New World.

"The subfamilies of the *Picidæ* may be most easily distinguished as follows, although other characters could readily be given:

Picinæ. Tail-feathers pointed, and lanceolate at end; the shafts very rigid, thickened, and elastic.

Picumninæ. Tail soft and short, about half the length of wing; the feathers without stiffened shafts, rather narrow, linear, and rounded at end.

Junginæ. Tail soft and rather long, about three fourths the length of wing; the feathers broad, and obtusely rounded at end.

"Of these subfamilies the *Picinæ* alone occur north to Mexico. The *Junginæ*, to which the well-known Wryneck of England (*Jynx torquilla*) belongs, are exclusively Old World; the *Picumninæ* belong principally to the tropical regions of America, although a few species occur in Africa and India." (*Hist. N. Am. B.*)

The North American *Picinæ* may for convenience of identification be divided into the following groups:—

Dryobateæ. Bill variable in length; the outlines above and below nearly straight; the ends truncated; a prominent ridge on the side of the mandible springing from the middle of the base, or a little below, and running out either on the commissure, or extending parallel to and a little above it, to the end, sometimes obliterated or confluent with the lateral bevel of the bill. Nostrils considerably overhung by the lateral ridge, more or less linear, and concealed by thick bushy tufts of feathers at the base of the bill. Outer posterior toe generally longer than the anterior.

Melanerpeæ. Bill rather long; the outlines, that of the culmen especially, decidedly curved. The lateral ridge much nearest the culmen, and, though quite distinct at the base, disappearing before coming to the lower edge of the mandible; not overhanging the nostrils, which are broadly oval, rounded anteriorly, and not concealed by the bristly feathers at the base. Outer pair of toes nearly equal; the anterior rather longer.

Colapteæ. Bill rather long, much depressed, and the upper outline much curved to the acutely pointed (not truncate) tip. The commissure considerably curved. Bill without any ridges. The nostrils broadly oval and much exposed. Anterior outer toe longest.

The preceding diagnoses will serve to distinguish the three groups sufficiently for our present purposes; the bill being strongest in the *Dryobatcæ* and best fitted for cutting into trees by its more perfect wedge-shape, with strengthening ridges, as well as by the lateral beveling of both mandibles, which are nearly equal in thickness at the base, and with their outlines nearly straight. The lateral ridge is prominent, extending to the edge or end of the bill, and overhangs the nostrils, which are narrow and hidden. The *Melanerpeæ* and the *Colapteæ* have the upper mandible more curved (the commissure likewise), the lower mandible smaller and weaker, the bill with little or no lateral beveling. The nostrils are broadly oval and exposed. In the former, however, there is a distinct lateral ridge visible for a short distance from the base of the bill; while in the other there is no ridge at all, and the mandible is greatly curved.

In all the species of North American Woodpeckers, there is more or less red on the head in the male, and frequently in the female.

The eggs of all are lustrous polished white, without any markings, and laid in holes in trees, upon a bed of chips, no material being carried in for the construction of the nest.

According to Mr. Brewster (Bull. Nutt. Orn. Club, October, 1878, p. 179, foot-note), "the young of most, if not all, of the Woodpeckers, regularly moult the wing- and tail-feathers with the rest of the first plumage. No exceptions to this rule occur among large series of the common North American species examined, and it may probably be found to hold good among all, excepting, perhaps, some highly specialized groups. Another peculiar feature in the early development of the species most thoroughly investigated, and one which is perhaps common to all the members of this family, is the fact that a certain portion of the females in first plumage possess to a greater or less degree the adornments which in more advanced stages are peculiar to the males alone and which are lost with the first moult. Marked examples of this are afforded by young females of *Colaptes auratus*, *Picus pubescens*, and others of which detailed descriptions are given in the text."

The genera with which we have to deal in this work may be distinguished as follows:

Section Dryobateæ.

A. Posterior outer toe longer than the anterior one. (Fourth toe longer than third.)

a. Lateral ridge starting above the middle of the base of the bill, and extending to the tip.

1. Campephilus. Lateral ridge above the middle of the lateral profile of the bill when opposite the end of the nostrils, which are ovate, and rounded anteriorly. Bill much depressed, very long; gonys very long. Posterior outer toe considerably longer than the anterior. Primaries long, attenuated towards the tip. Spurious quill nearly half the second. Shafts of four middle tail-feathers remarkably stout, of equal size, and abruptly very much larger than the others; two middle tail-feathers narrower towards base than towards end.* A pointed occipital crest.

2. Dryobates. Lateral ridge in the middle of the lateral profile opposite the end of nostrils, which are ovate and sharp-pointed anteriorly. Bill moderate, nearly as broad as high. Outer hind toe moderately longer than the outer fore toe. Primaries broad to the tip, and rounded. Spurious primary not one third the second quill.

3. Picoides. Lateral ridge below the middle of the profile, opposite the end of the ovate acute nostrils, which it greatly overhangs. Bill greatly depressed; lower mandible deeper than the upper. Inner hind toe wanting, leaving only three toes. Tufts of nasal bristles very full and long.

b. Lateral ridge starting below the middle of the base of the bill, and running as a distinct ridge into the edge of the commissure at about its middle; the terminal half of the mandible rounded on the sides, although the truncate tip is distinctly beveled laterally.

4. Sphyrapicus. Nostrils considerably overhung by the lateral ridge, very small, linear. Gonys as long as the culmen from the nostrils. Tips of tail-feathers elongated and linear, not cuneate. Wings very long; exposed portion of spurious primary about one fourth that of second quill.

*A character common to all the members of the genus, and distinguishing them from the species of every other; this peculiar form of the middle tail-feathers is caused principally by a folding of the webs downward, almost against each other. The under surface of the shafts have a very deep groove their whole length, which is seen in no other genus.

B. Posterior outer toe considerably shorter than the anterior outer one. (Fourth toe shorter than third.)

5. **Ceophlœus.** Bill depressed. Lateral ridge above the middle of the lateral profile near the base. Nostrils elliptical, wide, and rounded anteriorly. Tail almost as in *Sphyrapicus*. A pointed occipital crest, as in *Campephilus*.

Section Melanerpeæ.

6. **Melanerpes.**

Back and wings banded transversely with black and white. Crown more or less red; rest of head with under parts grayish, and with red or yellow tinge on the middle of the abdomen. Rump white. (Subgenus *Centurus*.)

Upper parts uniform black, without bands, with or without a white rump; variable beneath, but without transverse bands. (Subgenus *Melanerpes*.)

Section Colapteæ.

7. **Colaptes.** Above brown, barred with black; a white spot on rump; lower parts, posterior to black crescent on chest, vinaceous white or pale vinaceous, handsomely spotted with black; shafts of quills and tail-feathers bright yellow or red.

Genus **CAMPEPHILUS** Gray.

Campephilus Gray, List of Genera, 1840, 54. Type, *Picus principalis* Linn.

"Gen. Char. Bill considerably longer than the head, much depressed, or broader than high at the base, becoming somewhat compressed near the middle and gradually beveled off at the tip. Culmen very slightly curved, gonys as concave, the curve scarcely appreciable; commissure straight. Culmen with a parallel ridge on each side, starting a little above the centre of the basal outline of the bill, the ridge projecting outwards and downwards, and a slight concavity between it and the acute ridge of the culmen. Gonys considerably more than half the commissure. Nostrils oval, below the lateral ridge near the base of the bill; concealed by the bristly feathers directed forward. Similar feathers are seen at the sides of the lower jaw and on the chin.

"Feet large; outer hind toe much longest; claw of inner fore toe reaching to middle of outer fore claw; inner hind toe scarcely more than half the outer one; its claw reaching as far as the base of the inner anterior claw, considerably more than half the outer anterior toe. Tarsus rather shorter than the inner fore toe. Tail long, cuneate; shafts of the four middle feathers abruptly much larger than the others, and with a deep groove running continuously along their under surface; webs of the two middle feathers deflected, almost against each other, so that the feathers appear narrower at the base than terminally. Wings long and pointed, the third, fourth, and fifth quills longest; sixth secondary longest, leaving six 'tertials,' instead of three or four as usual; primaries long, attenuated. Color continuous black, relieved by white patches. Head with a pointed occipital crest." (*Hist. N. Am. B.*)

This genus embraces the largest of known Woodpeckers. The largest species is *C. imperialis* Gould, of western Mexico, which considerably exceeds our Ivory-billed Woodpecker (*C. principalis*) in size, having the bill three and a half inches long (measured from the forehead) and the wing more than thirteen inches.

Campephilus principalis (Linn.)

IVORY-BILLED WOODPECKER.

Popular synonyms. White-billed Woodpecker; White-billed Logcock.

Picus principalis Linn S. N. ed. 12, 1766, 173.—Wils. Am. Orn. iv, 1811, 20, pl. 39, fig. 6. —Aud. Orn. Biog. i, 1832, 341; v, 1839, 525, pl. 66; B. Am. iv, 1842, 214, pl. 256.

Campephilus principalis GRAY, 1840.—BAIRD, B. N. Am. 1858, 83; Cat. N. Am. B. 1859, No. 72.—COUES, Key, 1872, 192; Check List, 1874, No. 293; 2d ed. 1882, No. 431.—B. B. & R. Hist. N. Am. B. ii, 1874, 496, pl. 49, figs. 1, 2.—RIDGW. Nom. N. Am. B. 1881, No. 359.

HAB. South Atlantic and Gulf States and lower Mississippi Valley, north to North Carolina, southern Illinois, and southeastern Missouri, west to eastern Texas. (According to AUDUBON, formerly occurred accidentally as far north as Maryland, and regularly in Kentucky, southern Indiana and up the Mississippi to the mouth of the Missouri.)

"SP. CHAR. Fourth and fifth quills equal; third a little shorter. Bill horn-white. Body entirely of a glossy blue-black (glossed with green below); a white stripe beginning half an inch posterior to the commissure, and passing down the sides of the neck, and extending down each side of the back. Under wing-coverts, and the entire exposed portion of the secondary quills, with ends of the inner primaries, bristles, and a short stripe at the base of the bill, white. Crest scarlet, upper surface black. Length, 21.00; wing, 10.00. *Female* similar, without any red on the head, and with two spots of white on the end of the outer tail-feather.

"In the male the entire crown (with its elongated feathers) is black. The scarlet commences just above the middle of the eye, and, passing backwards a short distance, widens behind and bends down as far as the level of the under edge of the lower jaw. The feathers which spring from the back of the head are much elongated above; considerably longer than those of the crown. In the specimens before us the black feathers of the crest do not reach as far back as the scarlet." (*Hist. N. Am. B.*)

There are no recent records of the occurrence of the Ivory-billed Woodpecker in Illinois. There can be little doubt, however, that it is still to be found in the heavily timbered counties of the extreme southern portion of the State. Audubon states that in descending the Ohio river he met with it near the confluence of that stream with the Mississippi, and that he observed it along the latter as far up as the mouth of the Missouri. The writer has a distinct recollection of what he believes to have been this species in White county, some forty miles south of Mount Carmel, but never observed it in the vicinity of the latter place.

The flight of this magnificent Woodpecker is said to be totally different from that of the Pileated, and on this account, when on the wing it may readily be distinguished from that species. Its manner of flight is similar to that of the Hairy Woodpecker, or by deep undulations, while that of the Pileated is an unsteady somewhat laborious flapping in a straight horizontal line. "The transit from tree to tree," as Audubon observes, "is performed by a single sweep, as if the bird had been swung in a curved line from one to the other." Its notes are also very different, sounding like *pait*,

pait, pait, uttered in "a clear, loud, and rather plaintive tone," heard "sometimes to the distance of half a mile, and resembling the false high note of a clarionet."

Genus **DRYOBATES** Boie.

Picus (part), Linn. S. N. ed. 10, i, 1758, 112; ed. 12, i, 1766, 173, and of most authors.
Dendrocopos Koch, Syst. Baier Zoöl. i, 1816, 72. Type, by elimination, *Picus major* Linn. (*Nec* Vieill. Analyse, 1816, p. 45.)
Dryobates Boie, Isis, 1826, 977. Type, *Picus pubescens* Linn.

"Gen. Char. Bill equal to the head, or a little longer; the lateral ridges conspicuous, starting about the middle of the base of the bill; the basal elongated oval nostrils nearest the commissure; the ridges of the culmen and gonys acute, and very nearly straight, or slightly convex towards the tip; the bill but little broader than high at the base, becoming compressed considerably before the middle. Feet much as in *Campephilus;* the outer posterior toe longest; the outer anterior about intermediate between it and the inner anterior; the inner posterior reaching to the base of the claw of the inner anterior. Tarsus about equal to the inner anterior toe; shorter than the two other long toes. Wings rather long, reaching to the middle of the tail, rather rounded; the fourth and fifth quills longest; the quills rather broad and rounded." (*Hist. N. Am. B.*)

The species found in eastern North America may be distinguished as follows:

A. Back longitudinally striped with white.
1. **D. villosus.** Outer tail-feathers without black bars. Wing, 4.25 or more.
2. **D. pubescens.** Outer tail-feathers barred with black. Wing less than 4.25.

B. Back transversely barred with white.
3. **D. borealis.** Auriculars entirely white; sides spotted with black. Wing, 4.60–4.75.

Dryobates villosus (Linn.)

HAIRY WOODPECKER.

Popular synonyms. Big Sapsucker; Big Guinea-Woodpecker.

Picus villosus Linn. S. N. ed. 12, i, 1866, 175.—Wils. Am. Orn. i, 1808, 150, pl. 9.—Nutt. Man. i, 1832, 575.—Aud. Orn. Biog. v, 1839, 164, pl. 416; Synop. 1839, 179; B. Am. iv, 1842, 244, pl. 262.—Baird, B. N. Am. 1858, 84 (var. *medius*); Cat. N. Am. B. 1859, No. 74.—Coues, Key, 1872, 193; Check List, 1874, No. 298; 2d ed. 1882, No. 438; B. N. W. 1874, 279 (a. *villosus*, b. *medius*).—Ridgw. Nom. N. Am. B. 1881, No. 360.
Picus villosus var. *medius* Baird, B. N. Am. 1858, 84.
Picus villosus var. *villosus* B. B. & R. Hist. N. Am. B. ii, 1874, 503, pl. 49, figs. 3, 4, 5.
Picus martinæ Aud. Orn. Biog. v, 1839, 81, pl. 417; Synop, 1839, 178; B. Am. iv, 1842, 240, pl, 260 (= young!).
Picus rubricapillus Nutt. Man. 2d ed. i, 1840, 685 (= *martinæ*).

Hab. Eastern United States (except Gulf States) and more southern British Provinces. (Replaced in Gulf States by *D. villosus audubonì*, in northern British America by *D. villosus leucomelas*, and in western North America by *D. villosus harrisi*.)

Sp. Char. Above black, with a white band down the middle of the back. All the middle and larger wing-coverts and all the quills with conspicuous spots of white. Two white

stripes on each side of the head; the upper scarcely confluent behind, the lower not at all so; two black stripes confluent with the black of the nape. Beneath white. Three outer tail-feathers with the exposed portions white. Length, 8.00–11.00; wing, 4.00–5.00; bill, 1.00–1.25. *Male*, with a nuchal scarlet crescent (wanting in the female) covering the white, generally continuous, but often interrupted in the middle. Immature birds of either sex with more or less of the whole crown spotted with red or yellow, or both, sometimes the red almost continuous.

Specimens from Mount Carmel measure, before skinning, as follows:

Adult males. Total length, 8.75–9.00; extent, 14.75–15.25.
Adult females. Total length, 8.50–9.00; extent, 14.00–15.00.

Bill varying from slate-color to bluish horn-color; iris brown, varying to claret-purple; feet ashy blue, olive-gray or slate-color.

This common and well-known species is a permanent resident throughout the State. It is most numerous, however, in winter though by no means rare, as a rule, during summer. It possesses no characteristics worthy of special mention here.

The large northern form, *D. villosus leucomelas*, may occur as a winter visitant to the extreme northern portion of the State.

In an article condemning the Yellow-bellied Woodpecker (*Sphyrapicus varius*) as a scourge to fruit and shade trees, published in the *Prairie Farmer* for Jan.—, 1862, Dr. P. R. Hoy, of Racine, Wisconsin, has the following good words to say for the present species:

"This species is not migratory but remains the entire year with us. Cheerful and industrious, he is always on the lookout for those worms that burrow in the substance of the wood, or under the bark of trees—the larva of the Capricorn Beetles, the Buprestidæ, etc. He is an expert at auscultation and percussion, and he is not indebted to Laennec for the art either. As he explores suspicious localities with gentle taps, he quickly detects the evidences of unsoundness, and is not slow to learn the cause. *Worms* is his hobby—soon he chips an opening, and with his long, slender tongue, armed with a barbed lance point, a capital tool, he soon extracts the cause of the evil. While engaged "worming," he continues to utter his cheerful *Plick, Plick*, in a major key, as if conscious that he is engaged in a good cause, and not ashamed to own it. You can always tell where he is. A few ears of corn is about all the pay he takes for his valuable work. Protect him, he is our friend. May that gun ever hang fire that is directed against the Hairy Woodpecker."

Dryobates pubescens (Linn.)

DOWNY WOODPECKER.

Popular synonyms. Little Sapsucker; Little Guinea-Woodpecker.

Picus pubescens Linn. S. N. ed. 12, i, 1766, 175.—Wils. Am. Orn. i, 1808, 153, pl. 9, fig. 4.—Nutt. Man. i, 1832, 576.—Aud. Orn. Biog. ii, 1834, 81; v, 1839, 539, pl. 112; Synop. 1839, 180; B. Am. iv, 249. pl. 263.—Baird, B. N. Am. 1858, 89; Cat. N. Am. B. 1859, No. 76.—Coues, Key, 1872, 194; Check List, 1874, No. 299; 2d ed. 1882, No. 440; B. N. W. 1874, 282 (a. *pubescens*).—B. B. & R. Hist. N. Am. B. ii, 1874, 509, pl. 49, figs. 6, 7.—Ridgw. Nom. N. Am. B. 1881, No. 361.

Picus (Dendrocopus) pubescens Sw. F. B.-A. ii, 1831, 307.

Picus (Dendrocopus) medianus Sw. F. B.-A. ii, 1831, 308 (New Jersey).

Picus medianus Nutt. Man. ii, 1834, 601.

Picus (Dendrocopus) meridionalis Sw. F. B.-A. ii, 1831, 308 (Georgia).

Hab. Eastern and northern North America, resident throughout; northwest to Alaska, including nearly the whole of that country, or from the Yukon Valley to Kodiak. (Replaced in the western United States and British Columbia by *D. pubescens gairdneri*.)

"Sp. Char. A miniature of *P. villosus*. Above black, with a white band down the back. Two white stripes on the side of the head; the lower of opposite sides always separated behind, the upper sometimes confluent on the nape. Two stripes of black on the side of the head, the lower not running into the forehead. Beneath white; all the middle and greater coverts and all the quills with white spots, the larger coverts with two series each; tertiaries or inner secondaries all banded with white. Two outer tail-feathers white, with two bands of black at end; third white at tip and externally; crissum sometimes spotted with black. Length about 6.25; wing, 3.75. *Male* with red terminating the white feathers on the nape. *Young* with whole top of head red." (*Hist. N. Am. B.*)

This, the smallest of our woodpeckers, is almost a perfect miniature of *D. villosus*, and is of very similar habits. It is rather more numerous, however, especially in summer.

Genus PICOIDES Lacépède.

Picoides Lacép. Mem. Inst. 1801, 509. Type *Picus tridactylus* Linn.

"Gen. Char. Bill about as long as the head, very much depressed at the base; the outlines nearly straight, the lateral ridge at its base much nearer the commissure than the culmen, so as to bring the large, rather linear nostrils close to the edge of the commissure. The gonys very long, equal to the distance from the nostrils to the tip of the bill. Feet with only three toes, the first or inner hinder one being wanting; the outer lateral a little longer than the inner, but slightly exceeded by the hind toe, which is about equal to the tarsus. Wings very long, reaching beyond the middle of the tail, the tip of the first quill between those of sixth and seventh. Color black above, with a broad patch of yellow on the crown*; white beneath, transversely banded on the sides. Quills, but not wing-coverts, with round spots. Lateral tail-feathers white, without bands on exposed portion, except in European species.

"The peculiarities of this genus consist in the absence of the inner hind toe and the great depression of the bill."

The two species represented in eastern North America, differ as follows:

* Except in female.

COMMON CHARACTERS. The American species of *Picoides* agree in being black above and white beneath; the crown with a yellow patch in the male; a white stripe behind the eye and another from the loral region beneath the eye; the quills (but not the coverts) spotted with white; the sides banded transversely with black. Four middle tail-feathers wholly black.

1. **P. arcticus.** Dorsal region without white markings; no supraloral white stripe or streak, nor nuchal band of white. Sides of the breast continuously black. *Male.* Crown with a patch of yellow, varying from lemon, though gamboge, to orange, and not surrounded by any whitish markings or suffusion. *Female.* Crown lustrous black, without any yellow, and destitute of white streaks or other markings. Wing, 4.85–5.25; tail, 3.60–3.85; culmen, 1.40–1.55.
2. **P. americanus.** Back barred or otherwise varied with white; a white supraloral streak and nuchal band. *Male.* Crown with a patch of yellow, surrounded or margined with more or less of a whitish suffusion. *Female.* Crown streaked, speckled, or suffused with whitish. Wing, 4.40–5.10; tail, 3.40–3.70; culmen, 1.10–1.25.

Picoides arcticus (Swains.)

ARCTIC THREE-TOED WOODPECKERS.

Popular synonym. Black-backed Three-toed Woodpecker.

Picus tridactylus "LINN." AUD. Orn. Biog. ii, 1834, 198; v, 1839, 538, pl. 132.—NUTT. Man. i, 1832, 578. (Not of LINN.)

Picus (Apternus) arcticus SW. F. B.-A. ii, 1831, 313, pl. 57.

Picus arcticus AUD. Synop. 1839, 182; B. Am. iv, 1842, 266, pl. 268.—NUTT. Man. 2d ed. i, 1840, 691.

Picoides arcticus GRAY, 1845.—BAIRD, B. N. Am. 1858, 98; Cat. N. Am. B. 1859, No. 82.—COUES, Key, 1872, 194; Check List, 1874, No. 300; 2d ed. 1882, No. 443; B. N. W. 1874, 284.—B. B. & R. Hist. N. Am. B. ii, 1874, 530, pl. 50, fig. 1.—RIDGW. Nom. N. Am. B. 1881, No. 367.

HAB. Northern North America, south, in winter, to northern border of United States (Massachusetts, Pennsylvania, northern Illinois, etc.); in the West, breeding south (to 40° at least) in higher mountain ranges.

"SP. CHAR. Above entirely uniform glossy bluish black; a square patch on the middle of the crown saffron-yellow, and a few white spots on the outer edges of both webs of the primary and secondary quills. Beneath white, on the sides of the whole body, axillars, and inner wing-coverts banded transversely with black. Crissum white, with a few spots anteriorly. A narrow concealed white line from the eye a short distance backwards, and a white stripe from the extreme forehead (meeting anteriorly) under the eye, and down the sides of the neck, bordered below by a narrow stripe of black. Bristly feathers of the base of the bill brown; sometimes a few gray feathers intermixed. Exposed portion of two outer tail-feathers (first and second) white; the third obliquely white at end, tipped with black. Sometimes these feathers with a narrow black tip." (*Hist. N. Am. B.*)

This species differs from the other American three-toed Woodpeckers chiefly in having the back entirely black. The white line from the eye is usually almost imperceptible, if not wanting entirely. Specimens vary but little; one from Slave Lake has a longer bill than usual, and the top of head more orange. The size of the crown patch varies; sometimes the frontal whitish is inappreciable. None of the females before me have any white spots in the black of head, as is always the case with those of *P. americanus*.

This northern bird is a rare winter visitor to the extreme northern portion of the State. According to Mr. Nelson (page 115 of his catalogue), "a specimen was shot from a telegraph pole in Chicago a few years ago by Dr. Velie." Mr. Nelson also states that it is a common species in northern Wisconsin, "and before the pines along the lake were destroyed, was probably a regular winter visitant."

Genus SPHYRAPICUS Baird.

Sphyrapicus Baird, Birds N. Am. 1858, 101. Type, *Picus varius* Linn.

"Gen. Char. Bill as in *Picus*, but the lateral ridge, which is very prominent, running out distinctly to the commissure at about the middle, beyond which the bill is rounded without any angles at all. The culmen and gonys are very nearly straight, but slightly convex, the bill tapering rapidly to a point; the lateral outline concave to very near the slightly beveled tip. Outer pair of toes longest; the hinder exterior rather longest; the inner posterior toe very short, less than the inner anterior without its claw. Wings long and pointed; the third, excluding the spurious, longest. Tail-feathers very broad, abruptly acuminate, with a very long linear tip. Tongue scarcely extensible." (*Hist. N. Am. B.*)

This is a very strongly marked genus, of which but a single species occurs east of the Rocky Mountains. In the West, however, occur three others, one of which (*S. thyroideus*) is perhaps the most beautiful of North American Woodpeckers, while it is further remarkable on account of the great difference in color between the sexes—a difference probably wholly exceptional in this family.

Sphyrapicus varius (Linn.)

YELLOW-BELLIED SAPSUCKER.

Popular synonyms. Red-throated Sapsucker; Squealing or Whining Sapsucker.

Picus varius Linn. S. N. ed. 12, i, 1766, 176.—Wils. Am. Orn. i, 1808, 147, pl. 9, fig. 2.—Nutt. Man. i, 1832, 574.—Aud. Orn. Biog. ii, 1834, 519; v, 1839, 537, pl. 190; Synop. 1839, 182; B. Am. iv, 1842, 263, pl. 267.

Sphyrapicus varius Baird, B. N. Am. 1858, 103; Cat. N. Am. B. 1859, No. 85.—Coues, Key, 1872, 195; Check List, 1874, No. 302; 2d ed. 1882, No. 446; B. N. W. 1874, 285. (a *varius*.)—B. B. & R. Hist. N. Am. B. ii, 1874, 539, pl. 51, figs. 1, 2.—Ridgw. Nom. N. Am. B. 1881, No. 369.

Hab. Eastern North America, north to at least 61°, in the interior, breeding from northern United States northward. (Replaced in the Rocky Mountain district by *S. nuchalis*, and along Pacific coast by *S. ruber*.)

"SP. CHAR. Third quill longest; second a little shorter; first between fourth and fifth, considerably shorter. General color above black, much variegated with white. Feathers of the back and rump brownish white, spotted with black. Crown crimson, bordered by black on the side of the head and nape. A streak from above the eye, and a broad stripe from the bristles of the bill, passing below the eye, and into the yellowish of the belly, enclosing a black postocular one, and a stripe along the edges of the wing-coverts, white. A triangular broad patch of scarlet on the chin and throat, bordered on each side by black stripes from the lower mandible, which meet behind and extend into a large quadrate spot on the breast. Rest of under parts yellowish white, or yellow, streaked and banded on the sides with black. Inner web of inner tail-feather white, spotted with black. Outer feathers black, edged and spotted with white. Quills spotted with white. Length, 8.25; wing, about 4.75; tail, 3.30. *Female* with the red of the throat replaced by white. Immature bird without black on the breast, or red on top of the head, as in every intermediate stage to the perfect plumage." (*Hist. N. Am. B.*)

This bird, the true "Sapsucker," is a winter resident in most portions of Illinois, and though it may perhaps breed sparingly in the extreme northern portion, I can find no record of its doing so.

GENUS **CEOPHLŒUS** CABANIS.

Hylatomus BAIRD, Birds N. Am. 1858, 107. Type *Picus pileatus* LINN. (*Nec Hylotoma* LATREILLE, 1804.

Ceophlœus CABAN, Jour. für Orn. 1862, 176. Same type.

"GEN. CHAR. Bill a little longer than the head; considerably depressed, or broader than high at the base; shaped much as in *Campephilus*, except shorter, and without the bristly feathers directed forwards at the base of the lower jaw. Gonys about half the length of the commissure. Tarsus shorter than any toe, except the inner posterior. Outer posterior toe shorter than the outer anterior, and a little longer than the inner anterior. Inner posterior very short, not half the outer anterior; about half the inner anterior one. Tail long, graduated; the long feathers much incurved at the tip. Wing longer than the tail, reaching to the middle of the exposed surface of tail; considerably graduated, though pointed; the fourth and fifth quills longest. Color uniform black. Head with pointed occipital crest. A stripe from nasal tufts beneath the eye and down side of neck, throat, lining of wing, and basal portion of under surface of quills, white; some species with the abdomen and sides barred black and brownish white; others with a white scapular stripe in addition. Male with whole crown and crest and maxillary patch red; female with only the crest red." (*Hist. N. Am. B.*)

This genus is similar in general appearance and size to *Campephilus*, but differs essentially in many respects; the differences being, however, mostly those which distinguish all other Woodpeckers from the species of *Campephilus*, which is unique in the peculiar structure of the tail-feathers and in other characters, as detailed under the head of that genus on page 374.

The single species belonging to North America has numerous representatives within the tropics.

Ceophlœus pileatus (Linn.)

PILEATED WOODPECKER.

Popular synonyms. Woodcock; Black Woodcock; Logcock; Black Logcock.

Picus pileatus Linn. S. N. ed. 12, i, 1766, 173.—Wils. Am. Orn. iv, 1811, 27, pl. 29, fig. 2.—Nutt. Man. i, 1 32, 537.—Aud. Orn. Biog. ii, 1834, 74; v, 1839, 533, pl. 111.—B. Am. iv, 1842, 226, pl. 257.

Hylatomus pileatus Baird, B. N. Am. 1858, 107; Cat. N. Am. B. 1859, No. 90.—Coues, Key, 1872, 192; Check List, 1874, No. 294; 2d ed. 1882, No. 432; B. N. W. 1874, 278; B. B. & R. Hist. N. Am. B. ii, 1874, 550, pl. 56, figs. 5, 6.—Ridgw. Nom. N. Am. B. 1881, No. 317.

Ceophlœus pileatus Cabanis, Jour. für Orn. 1862, 176.

Hab. Whole of heavily timbered portions of North America, south to Florida, Texas, New Mexico, and California; north to Nelson river and Fort Laird, or even to between latitude 62° and 63°, in the interior.

"Sp. Char. Fourth and fifth quills equal and longest; third intermediate between sixth and seventh. Bill blue-black; more horn-color beneath. General color of body, wings, and tail dull greenish black. A narrow white streak from just above the eye to the occiput; a wider one from the nostril feathers (inclusive), under the eye and along the side of the head and neck; sides of the breast (concealed by the wings), axillaries, and under wing-coverts, and concealed bases of all the quills, with chin and beneath the head, white, tinged with sulphur-yellow. Entire crown from the base of the bill to a well-developed occipital crest, as also a patch on the ramus of the lower jaw, scarlet-red. A few faint white crescents on the sides of the body and on the abdomen. Longer primaries generally tipped with white. Length, about 18.00; wing, 9.50. *Female* without the red on the cheek, and the anterior half of that on the top of the head replaced by black." (*Hist. N. Am. B.*)

This noble bird, inferior only to the magnificent Ivory-bill (*Campephilus principalis*) among North American woodpeckers, occurs in wooded districts throughout the State, being still abundant in the more heavily timbered portions. It is very active and noisy, and therefore as well as on account of its large size and striking colors, is a conspicuous bird. Its blows upon dead trees sound more like those of a woodman's axe than the hammerings of other woodpeckers, while its spread of wing and general bulk may be compared to that of a crow; and, although a far less powerful bird than the Ivory-bill, it is nevertheless sure to attract the attention, or even excite the enthusiasm, of the ornithologist.

"The loud hammering of this large and vigorous bird on the sonorous dried trees, compared with which the tapping of the smaller species is but a weak noise, very soon becomes familiar to the ear of the woodman; and may designate the bird at a distance. The old adage, 'a workman is known by his chips,' certainly affirms much for the industry of this bird. In his search for insects for which he attacks the dead and dying trees, he will denude great spaces of the trunk and larger branches in a short time, heaping up the chips and strips of bark on the ground in an as-

tonishing manner. Very useful, indeed, must this bird be in preserving our primeval forests from the ravages of insects. Whether one notes his strong, undulating flight, his elastic bounding and springing along the trunks of the trees, the effective chiseling of his powerful bill, or his sonorous cackling, one is particularly impressed with the spirit and immense energy of the bird." (LANGILLE.)

GENUS **MELANERPES** SWAINSON.

SUBGENUS **Melanerpes.**

Melanerpes SWAINS. F. B.-A. ii. 1831, 316. Type, *Picus erythrocephalus* LINN.

Melanerpes erythrocephalus (Linn.)

RED-HEADED WOODPECKER.

Picus erythrocephalus LINN. S. N. ed. 12, i, 1766, 174.—WILS. Am. Orn. i, 1808, 142, pl. 9, fig. 1.—NUTT. Man. i, 1832, 569.—AUD. Orn. Biog. i, 1832, 141, pl. 27; Synop. 1839, 184; B. Am. iv, 1842, 274, pl. 271.

Melanerpes erythrocephalus SWAINS. F. B.-A. ii, 1831, 316.—BAIRD, B. N. Am. 1858, 113; Cat. N. Am. B. 1859, No. 94.—COUES, Key, 1872, 196; Check List, 1874, No. 309; 2d ed. 1882, No. 453; B. N. W. 1874, 290.—B. B. & R. Hist. N. Am. B. ii, 1874, 564, pl. 54, fig. 4.—RIDGW. Nom. N. Am. B. 1881, 375.

HAB. Eastern United States and British Provinces, west to eastern base of Rocky Mountains, south to Florida and Texas; breeds throughout; irregularly or locally migratory. Rare in most parts of New England.

SP. CHAR. *Adult.* Entire head, neck, and jugulum uniform rich crimson, bordered below against white of breast, by a more or less distinct black line. Secondaries, rump, upper tail-coverts, and lower parts white, the abdomen usually more or less tinged with reddish. Back and scapulars glossy blue-black; wings, except secondaries, and tail deep black. Bill bluish white, darkening into plumbeous terminally; iris brown (varying from umber to chestnut); feet greenish gray. *Young.* Head, neck, and jugulum brownish gray, streaked with dusky. Back mixed black and grayish; secondaries with one or more black bands near ends.

Total length (fresh specimens), 9.25–9.75; extent, 17.00–17.75; wing, (skins), 5.30–5.70; tail, 3.60–3.75.

This splendid Woodpecker, to which belongs the honor of having been the first bird to excite the latent enthusiasm of Alexander Wilson, and determine him to be an ornithologist, is found throughout the State. In the more heavily wooded portions it is decidedly the most numerous member of the family. As a rule, it is, in the vicinity of Mount Carmel at least, and presumably in similar localities throughout the southern portion of the State, not only a permanent resident but is even more abundant in winter than in summer. Sometimes (probably very rarely), however, it makes a complete migration which is very difficult to account for.

Subgenus **Centurus** Swainson.

Centurus Swains. Classif. B. ii, 1837, 310. Type, *Picus carolinus* Linn.

Gen. Char. Bill about as long as the head, or a little longer, the length from the tip to the nostril about equal to the tarsus, or a little greater; decidedly compressed anteriorly, but depressed at the extreme base; the lateral groove distinct for half the length of the bill; culmen decidedly but gently curved from the base; gonys nearly straight, and about half as long as the culmen. Nostrils broad, elliptical, situated about midway between the culmen and tomium, and only partly concealed by the frontal tufts. Anterior outer toe a little longer than the posterior, the inner anterior toe decidedly shorter, and the inner hind toe only about half its length. Wings long and broad, third to fifth primaries longest, the first equal to the sixth to the ninth. Tail about two thirds as long as the wing, graduated, the feathers (except the outer) rather abruptly attenuated at ends. Colors, banded with black and white, or yellow, above, with more or less of the pileum scarlet in the male; below plain, the abdomen tinged with red, orange, or yellow in most species.

While only one species of *Centurus* occurs in eastern North America, two others are found along our southwestern border: *C. aurifrons* in southern Texas, and *C. uropygialis* in southern New Mexico and Arizona. Other species belong to Mexico, Central America, Cuba, Hayti, and Jamaica.

Melanerpes carolinus (Linn.)

RED-BELLIED WOODPECKER.

Popular synonyms. Carolina Woodpecker; Checkered Woodpecker; Wood Chuck; Zebra Woodpecker.

Picus carolinus Linn. S. N. ed. 10, i, 1758, 113; ed. 12, i, 1766, 174.—Wils. Am. Orn. i, 1808, 115, pl. 7, fig. 2.—Nutt. Man. i, 1832, 572.—Aud. Orn. Biog. v, 1839, 169, pl. 415; Synop. 1839, 183; B. Am. iv, 1842, 270, pl. 270.

Centurus carolinus Bp. 1838.—Baird, B. N. Am. 1858, 109; Cat. N. Am. B. 1859, No. 91.—Coues, Key, 1872, 196; Check List, 1874, No. 306; 2d ed. 1882, No. 450; B. N. W. 1874, 289.—B. B. & R. Hist. N. Am. B. ii, 1874, 289.—Ridgw. Nom. N. Am. B. 1881, No. 372.

Melanerpes (*Centurus*) *carolinus* Ridgw. Ann. Lyc. N. Y. Jan. 1874, 378.

Hab. Eastern United States, rare northward, but occurring accidentally as far as Massachusetts; west, sparingly, to eastern base of Rocky Mountains, and south to Florida and eastern Texas (except Rio Grande Valley).

Sp. Char. *Adult male.* Entire pileum and nape bright scarlet, deepest on the crown, the forehead lighter, or more pinkish (sometimes approaching reddish white); rest of the head and neck with lower parts, pale buff-grayish, lighter on the chin and throat; middle of the abdomen pinkish red, the remainder of the lower parts sometimes tinged with the same, especially on the breast and cheeks; tibiæ and crissum white, relieved by rather sparse hastate marks of black. Back scapulars and upper part of rump broadly and distinctly barred with black and white, the two colors in about equal proportion, or the black bars rather the wider; wings black, the coverts and secondaries barred with pure white; primaries tipped with white, narrowly margined with the same beyond their emarginations and blotched with white near the base; upper tail-coverts and lower part of rump white, relieved by rather sparse irregularly hastate spots or bars of black, the coverts sometimes

nearly immaculate. Tail black; the inner webs of the *intermediæ* chiefly white, crossed with a greater or less number of broad black bars, or transverse spots, the outer webs with a longitudinal stripe of white on the basal half; outer rectrices broadly barred at the ends with dull white, and with spots of the same indenting the outer web; next pair of feathers tipped with yellowish white. *Adult female.* Similar to the male, but red of the crown replaced by deep ash-gray, lighter anteriorly; lower parts tinged with red only on the abdomen, and cheeks with little if any red tinge. *Young female.* Whole pileum dull brownish gray, transversely mottled with darker; nape dull light fulvous red; back and scapulars barred with grayish white and grayish dusky, much less sharply than in the adult; abdomen tinged with dull buff, but without red. Total length (fresh specimens), .910⅜ inches; extent, 15⅝-17½; wing (skins), 4.85-5.40; tail, 3.50-3.90; culmen, 1.00-1.20; tarsus, .80-.90. Bill (in life), slate-black, the basal portion of gonys sometimes mixed with light ashy; iris varying from ferruginous to bright scarlet; naked orbital spaces olivaceous ashy; legs and feet olivaceous. In the *young*, iris brown.

Among adult males of this species, the principal variation is in the amount of red tinge on the lower parts. In most examples from the Atlantic States and in many from the Mississippi Valley, the reddish is entirely confined to the middle of the abdomen, while on the head there is a mere tinge of it on the lores and cheeks. Many western specimens, however, had the breast more or less strongly tinged with purplish pink, while two now before me (No. 34317, Kansas City, Mo., May 14, 1864, and another from Mount Carmel, Ill., May 28, 1878), have not only the lores and cheeks, but the whole chin and upper throat also, bright salmon-color, or saffron-pink. In these highly-colored specimens the forehead is a bright saffron-red, while the Kansas City specimen above alluded to has the red on the abdomen very intense, approaching a saffron-scarlet. An adult female from southern Illinois (Mount Carmel, October 18, 1879), has the occiput red, like the nape, while there are several red feathers in the middle of the crown.

Next to the Red-head (*Melanerpes erythrocephalus*) this is probably the most abundant Woodpecker in southern Illinois. It is also, perhaps with the same exception, the most conspicuous and, instead of being shy and retiring, as has been recorded of it by writers, it is almost constantly to be seen in orchards and the vicinity of houses, as well as in the depths of the forest. It is very fond of ripe apples, and where very abundant thus makes itself somewhat of a nuisance. Besides raiding the orchards it is also in winter a frequent visitor to the corn crib, to which it easily gains ingress between the logs and thus obtains an abundant supply of food. It

is rather a noisy bird. its emphatic and not disagreeable notes of *chuck, chuck, chuck,* or *chow, chow, chow,* being frequently repeated.

In contest with the Red-headed Woodpecker it is, so far as I have observed, invariably vanquished.

In the northern portion of the state it is comparatively rare, and also said to be only a summer resident. Mr. H. K. Coale informs me that he saw a pair in Lincoln Park, Chicago, in July, and that they were evidently breeding there, as he saw one of them come out of a hole in the dead top of an oak tree.

Genus **COLAPTES** Swainson.

Colaptes Swainson, Zoöl. Jour. iii, Dec. 1827, 353. Type *Cuculus auratus* Linn.

"Gen. Char. Bill slender, depressed at the base, then compressed. Culmen much curved, gonys straight; both with acute ridges, and coming to quite a sharp point with the commissure at the end; the bill consequently not truncate at the end. No ridges on the bill. Nostrils basal, median, oval and exposed. Gonys very short; about half the culmen. Feet large, the anterior outer toe considerably longer than the posterior. Tail long, exceeding the secondaries; the feathers suddenly acuminate, with elongated points." (*Hist. N. Am. B.*)

Excluding the *C. chrysoides,* Malh., which is confined to the extreme southwestern portion of the Union, (Arizona and southern California), the two remaining North American species of *Colaptes* may be distinguished as follows:

Common Characters. Head and neck ashy or brown, unvaried except by a black or red malar patch in the male, and sometimes, in both sexes, a scarlet occipital patch. Back and wings brown, banded transversely with black; rump and upper tail-coverts white. Beneath whitish, with circular black spots, and bands on crissum; a black pectoral crescent. Shafts and under surfaces of quills and tail-feathers either yellow or red.

1. **C. auratus.** Under surface and shafts of wings and tail rich golden yellow. A red nuchal crescent. Throat pinkish, top of head ashy. Male with the "moustaches" glossy black. Hab. Eastern North America.
2. **C. mexicanus.** Under surface and shafts of wings and tail pinkish red. No red nuchal crescent. Throat ash, top of head brownish. Male with the "moustaches" bright red. Hab. Western North America.

Distinct as these two forms appear to be, they are yet connected by a series of intermediate specimens which have been a great puzzle to ornithologists. This intermediate series is further considered under the head of *C. hybridus* on page 387.

Colaptes auratus (Linn.)

FLICKER.

Popular synonyms. Yellow-hammer; Yellow-shafted Flicker; Wake-up; High-holder, or High-hole; Clape; Golden-winged Woodpecker; Pigeon Woodpecker.

Cuculus auratus Linn. S. N. ed. 10, i, 1758, 112.

Picus auratus Linn. S. N. ed. 12, i, 1766, 174.—Wils. Am. Orn. i, 1808, 45, pl. 3, fig. 1.—Nutt. Man. i, 1832, 561.—Aud. Orn. Biog. i, 1832, 191; v, 1839, 540, pl. 37; Synop. 1839, 184; B. Am. iv, 1842, 282, pl. 273.

Colaptes auratus Sw. 1827.—Baird, B. N. Am. 1858, 118; Cat. N. Am. B. 1859, No. 97.—Coues, Key, 1872, 197; Check List, 1874, No. 312; 2d ed. 1882, No. 457; B. N. W. 1874, 292.—B. B. & R. Hist. N. Am. B. ii, 1874, 575, pl. 55, figs. 1, 2.—Ridgw. Nom. N. Am. B. 1881, No. 378.

Hab. Eastern and northern North America, including all wooded parts of Alaska, south to Sitka; south to Florida and eastern Texas, west to edge of Great Plains; casual in California.

"Sp. Char. Shafts and under surfaces of wing- and tail-feathers gamboge-yellow. Male with a black patch on each side of the cheek. A red crescent on the nape. Throat and stripe beneath the eye pale lilac-brown. Back glossed with olivaceous green. Female without the black cheek-patch.

"Additional Characters. A crescentic patch on the breast and rounded spots on the belly black. Back and wing-coverts with interrupted transverse bands of black. Neck above and on the sides ashy. Beneath pale pinkish brown, tinged with yellow on the abdomen, each feather with a heart-shaped spot of black near the end. Rump white. Length, 12.50; wing, 6.00." (*Hist. N. Am. B.*)

Wing, 5.50–6.40; tail, 4.50–4.90.

Specimens from Mt. Carmel measured, before skinning, as follows:

Adult males: Total length, 12.15–12.75; extent, 19.60–20.75.

Adult females: Total length, 12.00–12.25; extent, 19.25–19.75.

To so common and well-known a bird as the "Yellow-hammer" or Flicker, we need here give but a brief notice. It is universally distributed throughout the State, and is everywhere a permanent resident.

Colaptes hybridus (Baird.)

HYBRID FLICKER.

Colaptes ayresii Aud. B. Am. vii, 1843, 348, pl. 494.

Colaptes hybridus Baird, B. N. Am. 1858, 122; Cat. N. Am. B. 1859, No. 98*a*.

Colaptes auratus hybridus Ridgw. Nom. N. Am. B. 1881, No. 378*a*, 11.

Colaptes aurato-mexicanus Sundev. Consp. Av. Picin. 1866, 72.

Hab. Western United States, but chiefly the region of the upper Missouri, and thence across the northern border and south into California.

Char. Intermediate between *C. auratus* and *C. mexicanus*, the character of the two species being mixed in various degrees, in different specimens. Typical combinations are as follows:

a. With the shafts, etc., orange, or intermediate in tint between the yellow of *auratus* and the red of *mexicanus*.

b. With the pure yellow shafts, etc., of *auratus*, combined with red "moustaches" of *mexicanus*.

c. Similar to *mexicanus*, but having either the red occipital crescent or pinkish throat of *auratus*.

d. Similar to *mexicanus*, but having the red "moustaches" mixed with black feathers.

e. Similar to *auratus*, but with red or orange-colored feathers mixed in wing or tail; or like *mexicanus*, but with yellow feathers in wing or tail.

ORDER **COCCYGES**.—THE CUCKOOS, ETC.

CHARACTERS. Bill variable in form, but never chisel-shaped at tip, the culmen usually more or less curved; tongue not extensile nor barbed at tip; feet zygodactyle, or else the middle and outer toes connected for at least half their length.

FAMILY **ALCEDINIDÆ**.—THE KINGFISHERS.

"CHAR. Head large, bill long, strong, straight, and sub-pyramidal, usually longer than the head. Tongue very small. Wings short; legs small, the outer and middle toes united to their middle. Toes with the usual number of joints (2, 3, 4, 5).

"The gape of the bill in the Kingfishers is large, reaching to beneath the eyes. The third primary is generally longest; the first decidedly shorter; the secondaries vary from twelve to fifteen in number, all nearly equal. The secondaries cover at least three quarters of the wing. The tail is short, the feathers twelve in number; they are rather narrow, the outer usually shorter. The lower part of the tibia is bare, leaving the joint and the tarsus uncovered. The tarsus is covered anteriorly with plates; behind, it is shagreen-like or granulated. The hind toe is connected with the inner, so as to form with it and the others a regular sole, which extends unbroken beneath the middle and outer as far as the latter are united. The inner toe is much shorter than the outer. The claws are sharp; the middle expanded on its inner edge, but not pectinated." (*Hist. N. Am. B.*)

GENUS **CERYLE** BOIE.

Ceryle BOIE, Isis, 1828, 316. Type, *Alcedo rudis* FINN.

"GEN. CHAR. Bill long, straight, and strong, the culmen slightly advancing on the forehead and sloping to the acute tip; the sides much compressed; the lateral margins rather dilated at the base, and straight to the tip; the gonys long and ascending. Tail rather long and broad. Tarsi short and stout.

"This genus is distinguished from typical *Alcedo* (confined to the Old World) by the longer tail, an indented groove on each side the culmen, inner toe much longer than the hinder instead of equal, etc." (*Hist. N. Am. B.*)

Only one species occurs in eastern North America, except in southern Texas, where the *C. cabanisi*, of tropical distribution, is found.

Ceryle alcyon (Linn.)

BELTED KINGFISHER.

Popular synonym. Kingfisher.

Alcedo alcyon Linn. S. N. ed. 12, i, 1766, 180.—Wils. Am. Orn. iii, 1811, 59.—Aud. Orn. Biog. i, 1831, 394, pl. 77; Synop. 1839, 173; B. Am. iv, 1842, 205, pl. 255.—Nutt. Man. i, 1832. 594.

Ceryle alcyon Boie, 1828.—Baird, B. N. Am. 1858, 158; Cat. N. Am. B. 1859, No. 117.—Coues, Key, 1872, 188; Check List, 1874, No. 286; 2d ed. 1882, No. 423; B. N. W. 1874, 372.—B. B. & R. Hist. N. Am. B. ii, 1874, 392, pl. 45, fig. 6.—Ridgw. Nom. N. Am. B. 1881, No. 382.

Hab. Whole of North America, south (in winter only ?) to Isthmus of Panama and throughout West Indies.

Sp. Char. Bluish plumbeous above, white beneath; nape with a white collar and breast with a plumbeous or brownish band. Head with a double erectile crest of narrow feathers. *Adult male.* Sides white, tinged with plumbeous. *Adult female.* Sides and a more or less complete band across belly, rufous. *Young.* Similar to the adult, but the male with the breast-band and color of sides tinged with rusty.

Total length (fresh specimens), 13.50–14.50; extent, 22.50–24.00; wing (skins), 9.10–9.50; tail, 3.80–4.30.

The Belted Kingfisher is to be found wherever there are streams, ponds, or lakes, affording a sufficient supply of its food. It is chiefly a summer resident, but has been frequently observed during mild winters in the southern counties.

"The Kingfisher," says Dr. Brewer,* "is an eminently unsocial species. It is never found other than in solitary pairs, and these are very rarely seen together. They feed almost entirely upon fish, which they capture by plunging into the water, and which they always swallow whole on emerging from their bath. Undigested portions of their food, such as scales, bones, etc., they have the power of occasionally ejecting from their stomachs. They may usually be noticed by the sides of streams, mill ponds and lakes stationed on some convenient position that enables them to overlook a deep place suitable for their purpose, and they rarely make a plunge without accomplishing their object."

"They nest in deep holes excavated by themselves in the sides of streams, ponds or cliffs, not always in the immediate vicinity of water. These excavations are often near their accustomed fishing grounds, in some neighboring bank, usually not many feet from the ground, always in dry gravel, and sufficiently high to be in no danger of inundation. They make their burrow with great industry and rapidity, relieving one another from time to time, and working incessantly until the result is satisfactorily accomplished. When dig-

*Hist. N. Am. B., Vol. II, pp. 394, 395.

ging through a soft fine sand bank, their progress is surprising, sometimes making a deep excavation in a single night. The pages of "The American Naturalist" contain several animated controversies as to the depth, the shape, and the equipment of these passages. The result of the evidence thus given seems to be that the holes the Kingfishers make are not less than four nor more than fifteen feet in length; that some are perfectly straight, while some, just before their termination, turn to the right, and others to the left; and that all have, at or near the terminus, an enlarged space in which the eggs are deposited. Here the eggs are usually laid on the bare sand, there being very rarely, if ever, any attempt to construct a nest. The use of hay, dry grass, and feathers, spoken of by the older writers, does not appear to be confirmed by more recent testimony. Yet it is quite possible that in certain situations, the use of dry materials may be resorted to, to protect the eggs from a too damp soil."

Family CUCULIDÆ.—The Cuckoos.

Char. Bill compressed, usually more or less lengthened and with decurved culmen. Rictal bristles few or none. Nostrils exposed, no nasal tufts. Tail long and soft, of eight to twelve feathers. Toes in pairs, deeply cleft or not united, the outer anterior toe usually versatile, but directed rather laterally than backward.

"The *Cuculidæ* form a strongly marked group of birds, easily distinguished among the *Zygodactyli* by the characters given above. The outer toe is versatile, but in the American forms is more lateral than posterior, in the skin standing sideways, or even anterior, more frequently than behind." (*Hist. N. Am. B.*)

Of the several subfamilies which have been recognized by authors, only three belong to eastern North America, and of these two are mere stragglers from other regions. They may be characterized as follows:

Coccyzinæ. Face covered with feathers; bill elongated, more or less cylindrical, straight or curved. Tail of ten feathers.
Bill about the length of the head, or not longer; curved. Loral feathers soft. Legs weak, tarsus shorter than the toes. Arboreal ..... *Coccyzus.*
Bill longer than the head; straight. Loral feathers stiff, bristly. Tarsi much longer than the toes. Terrestrial ..... *Geococcyx.*
Crotophaginæ. Face naked; bill much compressed, with a sharp crest. Tail of eight feathers. Bill shorter than and nearly as high as the head. *Crotophaga.*

Only *Coccyzus* has a claim to special notice in this connection, *Crotophaga* and *Geococcyx* being "extralimital" so far as this work is concerned, although the latter approaches rather near, having been obtained in the western portion of the Indian Territory (Kiowa Agency) and in Southwestern Kansas.

Genus COCCYZUS Vieillot.

Coccyzus Vieillot, Analyse, 1816, 28. Type, *Cuculus americanus* Linn.

"Gen. Char. Head without crest; feathers about base of bill soft; nearly as long as the head, decurved, slender, and attenuated towards the end. Nostrils linear. Wings lengthened, reaching the middle of the tail; the tertials short. Tail of ten graduated feathers. Feet weak; tarsi shorter than the middle toe.

"The species of *Coccyzus* are readily distinguished from those of *Geococcyx* by their arboreal habits, confining themselves mainly to trees, instead of living habitually on the ground. The plumage is soft, fine and compact.

"The American Cuckoos differ from the European (*Cuculus*) by having lengthened naked tarsi, instead of very short feathered ones. The nostrils, too, are elongated instead of rounded. The habits of the two are entirely different, the American species rearing their young, instead of laying eggs in the nests of other birds, like the European Cuckoo and the American Cowbird (*Molothrus pecoris*)." (*Hist. N. Am. B.*)

The two species of *Coccyzus* which are entitled to notice here may be distinguished by the following characters:

1. **C. americanus.** Tail feathers (except middle pair) black with broad white tips. Inner webs of primaries mostly rufous. Mandible and bare orbits yellow.
2. **C. erythrophthalmus.** Tail feathers grayish brown, with very narrow tips of dull whitish. Inner webs of primaries rufous only in young. Mandible bluish (blackish in dried skins), bare orbits deep red in the adult (yellow in young).

Coccyzus americanus (Linn.)

YELLOW-BILLED CUCKOO.

Popular synonyms. Rain Crow; Wood Pigeon; Cow-cow.

Cuculus americanus Linn S. N. ed. 12, i, 1766, 170.

Coccyzus americanus Bp. 1825.—Nutt. Man. i, 1832, 551.—Aud. Orn. Biog. i, 1832, 18; v, 1839, 520, pl. 2; Synop. 1839, 187; B. Am. iv, 1842, 293, pl. 275.—Coues, Key, 1872, 190; Check List, 1874, No. 291; 2d ed. 1882, No. 429; B. N. W. 1874, 275.—Ridgw. Nom. N. Am. B 1881, No. 387.

Coccyzus americanus Cab. 1856.—Baird, B. N. Am. 1858, 76; Cat. N. Am. B. 1859, No. 69.—B. B. & R. Hist. N. Am. B. ii, 1874, 477, pl. 48, fig. 4.

Cuculus carolinensis Wils. Am. Orn. iv, 1811, 13, pl. 28.

Hab. United States in general, especially the Eastern Province (irregularly distributed in the Western), north to British Provinces; in winter, south through Mexico and Central America as far as Costa Rica, and also many of the West India Islands. Accidental in Europe.

"Sp. Char. Upper mandible and tip of lower, black; rest of lower mandible and cutting edges of the upper, yellow. Upper parts of a metallic greenish olive, slightly tinged with ash towards the bill; beneath white. Tail feathers (except the median, which are like the back) black, tipped with white for about an inch on the outer feathers, the external one with the outer edge almost entirely white. Quills orange-cinnamon; the terminal portion and a gloss on the outer webs olive; iris brown. Length, 12.00; wing, 5.95; tail, 6.35." (*Hist. N. Am. B.*)

There is considerable variation in the amount of rufous in the quills; sometimes this shows very distinctly externally, sometimes it is entirely replaced by the bronzed olive of the back. A greater amount of the rufous seems to characterize the more southern and

Jamaica specimens, which also are smaller; northern specimens, however, show similar variations. In the immature birds the under surface of the tail-feathers is gray, not black, so that the contrast with the white tips is very indistinct, as in *erythrophthalmus*, in which, however, these light tips are much narrower, while the bill is entirely black.

This bird, familiarly known as the Rain Crow, Wood Pigeon, or Cow-cow, is a summer resident of all portions of the State, though more abundant southward, its range being to some extent complementary to that of the black-billed species, which is more common northward.

While habitually building its own nest, and caring for its young, this species as well as *C. erythrophthalmus* occasionally not only impose on one another, but also, though more rarely, upon other birds. Of this fact there is much indisputable evidence on record. It is also a well-known fact that in nests of both these species it is not an uncommon thing to find not only eggs in different stages of incubation but also young and freshly laid eggs in the same nest. Colonel S. T. Walker, of Milton, Florida, writes to Professor Baird that he has found young birds in the nest just ready to fly, others half fledged, and some just hatched, and at the same time one or two fresh eggs. He is not sure whether other Cuckoos lay in the same nest or whether the same bird continues to lay while setting. From what he has seen, however, he is inclined to believe that the latter is the case, and that "the old bird utilizes the warmth of the young first hatched to continue the incubation of eggs subsequently laid."

Regarding this point it may be stated that the parasitic habit of the European Cuckoo (*Cuculus canorus*) is supposed to result from the very slow development of the eggs in the oviduct, rendering it practically impossible for themselves to attend to the incubation of their eggs; and it may be suggested that the circumstances to which Col. Walker alludes, and which have been noted by other observers, arise from the same cause. Furthermore since, as stated above, it is known also that both the American Cuckoos occasionally drop

an egg in the nest of the other, or even in other birds' nests, it is not at all improbable that they may eventually become completely parasitic, like their European cousins.

Coccyzus erythrophthalmus (Wils.)

BLACK-BILLED CUCKOO.

Cuculus erythrophthalmus Wils. Am. Orn. iv, 1811, 16, pl. 27, fig. 2.
Coccyzus erythrophthalmus Bp. 1825.—Aud. Orn. Biog. i, 1832, 170, pl. 32; Synop. 1839, 187; B. Am. iv, 1842, 300, pl. 276.—Coues, Key, 1872, 199; Check List, 1872, No. 290; 2d ed. 1882, No. 428; B. N. W. 1874, 274.—Ridgw. Nom. N. Am. B. 1881, No. 388.
Coccyzus erythrophthalmus Cab. 1856.—Baird, B. N. Am. 1858, 77; Cat. N. Am. B. 1859, No. 70.—B. B. & R. Hist. N. Am. B. ii, 1874, 484, pl. 48, fig. 5.
Coccyzus dominicus "Linn." Nutt. Man. i, 1832, 556 (*nec* Linn.)

Hab. Eastern North America, north to Labrador, west to Rocky Mountains; south in winter, through eastern Mexico and Central America to the Amazon Valley; Cuba (and Florida?) in winter. Accidental in Europe.

"Sp. Char. Bill entirely black. Upper parts generally of a metallic greenish olive, ashy towards the base of the bill; beneath pure white, with a brownish yellow tinge on the throat. Inner webs of the quills tinged with cinnamon. Under surface of all the tail-feathers hoary ash-gray. All, except the central on either side, suffused with darker to the short, bluish white, and not well-defined tip. A naked red skin round the eye. Length, about 12.00; wing, 5.00; tail, 6.50." (*Hist. N. Am. B.*)

"*First plumage: female.* Above lustrous plumbeous ashy, feathers upon the crown, nape, and anterior part of the back, narrowly tipped with pale ashy; those of the interscapular region and rump, together with the scapulars and upper tail-coverts, more broadly so with ashy white. Outer edges of quills light rufous. Beneath delicate pearl-gray, lightest on the abdomen, slightly tinged with pale brownish yellow on the throat and breast. From a specimen in my collection shot in Lincoln, Mass., June 17, 1871. Autumnal specimens (probably only the young birds) differ from spring adults in having the naked skin around the eye yellow instead of red." (Brewster, Bull. Nutt. Orn. Club, Oct. 1878, p. 178.)

Popularly confounded with the Yellow-billed Cuckoo, this species closely resembles it in habits and in general appearance. They may not frequently be found in the same localities, as evidence of which it may be stated that the writer once found a nest of each in adjoining trees in an apple orchard, near Mt. Carmel. In the vicinity of the place just mentioned it is far rarer than the *C. americanus*, occurring in about the proportion of one to twenty-five of the latter; but to the northward it increases in numbers until in the northern portion of the State, it is perhaps more common than *C. americanus*.

Order PSITTACI.—The Parrots, etc.

Char. Bill deep and strongly hooked, the upper mandible movable, as well as the lower, and furnished at base with a distinct cere, or else the latter densely covered with short feathers; feet zygodactyle.

Family PSITTACIDÆ.—The Parrots.

"Char. Bill greatly hooked; the maxilla movable and with cere at the base. Nostrils in the base of the bill. Feet scansorial, covered with granulated scales." (*Hist. N. Am. B.*)

Genus CONURUS Kuhl.

Conurus Kuhl, Consp. Psittac. 1820, 4. Type *Psittacus carolinensis* Linn.

"Gen. Char. Tail long, conical, and pointed; bill stout; cheeks feathered, but in some species leaving a naked ring round the eyes; cere feathered to the base of the bill.

"The preceding diagnosis, though not very full, will serve to indicate the essential characteristics of the genus among the Middle American forms with long pointed tails, the most prominent feature consisting in the densely feathered, not naked, cheeks. But one species belongs to the United States, though three others are found in Mexico, and many more in South and Central America. A few species occur in the West Indies." (*Hist. N. Am. B.*)

Conurus carolinensis (Linn.)

CAROLINA PAROQUET.

Popular synonym. Illinois Paroquet.

Psittacus carolinensis Linn. S. N. ed. 12, i, 1766, 141.—Wils. Am. Orn. iii, 1811, 89, pl. 24, fig. 1.—Nutt. Man. i, 1832, 545.—Aud. Orn. Biog. v, 1832, 135, pl. 26.

Conurus carolinensis Less. 1831.—Baird, B. N. Am. 1858, 67; Cat. N. Am. B. 1859, No. 63.—Coues, Key, 1872, 199; Check List, 1874, No. 315; 2d ed. 1882, No. 460; B. N. W. 1874, 296.—B. B. & R. Hist. N. Am. B. ii, 1874, 587, pl. 56, figs. 1, 2.—Ridgw. Nom. N. Am. B. 1881, No. 392.

Centurus (error *carolinensis*) Aud. Synop. 1839, 189; B. Am. iv, 1842, 386, pl. 278.

Hab. Now confined to limited portions of Florida and the Gulf States, and portions of the lower Mississippi Valley, north to Arkansas and Indian Territory—possibly to southern Mississippi and extreme southern portion of Illinois. Formerly abundant throughout the Mississippi Valley, east to the Alleghanies, north (extreme limits) to the Great Lakes, west to Nebraska and even eastern Colorado.

Sp. Char. *Adult.* Rich grass-green, varying to emerald in some lights, the lower parts lighter and more yellowish green than the upper; tertials, tips of greater coverts, and basal portion of primaries greenish yellow; primaries dark blue at tips. Forehead, lores and cheeks, rich orange-red, or orange-chrome; rest of head, with upper part of neck

pure gamboge-yellow. Edge of wing tinged with orange. Bill creamy white; eyelids whitish; iris blackish brown; feet whitish. *Young*. Similar, but no yellow on head or neck, which are green, the forehead only, or forehead and lores, dull orange-red.

Wing, 7.20–7.60; tail, 6.40–7.10.

The avian-fauna of Illinois has lost no finer or more interesting member than the present species, which is probably now everywhere extinct within our borders, though fifty years ago it was of more or less common occurrence throughout the State. The National Museum possesses a fine adult example from Illinois (Cat. No. 12272), another from Michigan, and several from the Platte River, in Nebraska; now, however, it appears to be quite exterminated except in isolated and rapidly contracting areas in Florida, and thence westward to the lower Mississippi Valley. Its present northern limit in the interior is uncertain, but so far as known is the eastern part of the Indian Territory and portions of Arkansas. In the opinion of the best judges, twenty-five years hence the species will exist only in museums and in literature.

An outline of its former distribution is thus given by Dr. Brewer, in *History of North American Birds*, Vol. II., p. 580:

"In descending the Ohio in the month of February, Wilson met the first flock of Parakeets at the mouth of the Little Scioto. He was informed by an old inhabitant of Marietta that they were sometimes, though rarely, seen there. He afterwards observed flocks of them at the mouth of the Great and Little Miami, and in the neighborhood of the numerous creeks which discharge themselves into the Ohio. At Big Bone Lick, near the mouth of the Kentucky River, he met them in great numbers. They came screaming through the woods, about an hour after sunrise, to drink the salt water, of which, he says, they are remarkably fond.

"Audubon, writing in 1842, speaks of the Parakeets as then very rapidly decreasing in number. In some regions, where twenty-five years before they had been very plentiful, at that time scarcely any were to be seen. At one period, he adds, they could be procured as far up the tributary waters of the Ohio as the Great Kanawha, the Scioto, the head of the Miami, the mouth of the Maumee at its junction with Lake Erie, and sometimes as far northeast as Lake Ontario. At the time of his writing very few were to be found higher than Cincinnati, and he estimated that along the Mississippi there were not half the number that had existed there fifteen years before."

Were it not for its piercingly shrill screeching notes, this species would be a great favorite as a cage bird, on account of its great beauty and extreme docility; but its distracting, "ear-splitting" notes render it extremely undesirable as a pet. The writer has owned several, and therefore had the experience which warrants the above statement.

The Carolina Parakeet breeds very readily in captivity if proper arrangements are made for the purpose.

Order **ACCIPITRES**.—The Birds of Prey.

Suborder **STRIGES**.—Nocturnal Raptores (Owls).

Char. Eyes directed forward, and surrounded by a radiating system of feathers, which is bounded, except anteriorly, by a ruff of stiff, compact-webbed, differently formed, and somewhat recurved feathers; loral feathers antrorse, long and dense. Plumage very soft, lax, of a fine downy texture, the feathers destitute of an after-shaft. Oil-gland without the usual circlet of feathers. Outer web of first primary with the points of the barbs recurved. Feathers on the sides of the forehead frequently elongated into ear-like tufts. Tarsus usually, and toes frequently, feathered. Ear-opening usually very large, sometimes provided with a lappet. Œsophagus destitute of a dilated crop; cœca large. Maxillo-palatines thick and spongy, and encroaching upon the intervening valley; basipterygoid processes always present. Outer toe reversible; posterior toe only about half as long as the outer. Posterior margin of the sternum doubly indented; clavicle weak and nearly cylindrical, about equal in length to the sternum; anterior process of the coracoid projected forward so as to meet the clavicle, beneath the basal process of the scapula.

Eggs variable in shape, usually nearly spherical, always immaculate white.

The above diagnosis is sufficient to distinguish this order from the most nearly related group, the *Accipitres*, or Diurnal Raptores. There are also many important anatomical peculiarities, which it is unnecessary to mention here. The Order comprises two well-marked families, which may be distinguished as follows:

Strigidæ. Inner toe equal to the middle in length; inner edge of middle claw pectinated. First quill longer than the third, all the quills with their inner web entire, or without emarginations. Tail emarginated. Feathers of the posterior face of the tarsus recurved, or pointed upwards.

Bubonidæ. Inner toe decidedly shorter than the middle one; inner edge of middle claw not pectinated. First quill shorter than the third; one or more of the outer quills with inner webs emarginated. Tail more or less rounded. Feathers of posterior face of tarsus (when present) pointed downwards.

Family STRIGIDÆ.—The Barn Owls.

Char. Inner toe equal to the middle in length; inner edge of middle claw pectinated. First quill longer than the third; all the quills with their inner web entire, or without emargination. Tail emarginated. Feathers of the posterior face of the tarsus recurved, or pointed upwards.

The family *Strigidæ* includes, so far as known, but two genera, *Strix* and *Phodilus*. The former is cosmopolitan, having species in nearly all parts of the world, with the exception of the colder regions. *Phodilus* is restricted to a limited portion of the Indian region, and need not be further mentioned here.

Genus STRIX Linnæus.

Strix Linn. S. N. ed. 10, i, 1758, 92. Type, *Strix flammea* Linn.
Aluco Gerini, Orn. Met. Dig. i, 1767, 88.

Gen. Char. Size medium. No ear-tufts; facial ruff entirely continuous, very conspicuous. Wing very long, the first or second quill longest, and all without emargination. Tail short, emarginated. Bill elongated, compressed, regularly curved; top of the cere nearly equal to the culmen, straight, and somewhat depressed. Nostril open, oval, nearly horizontal. Eyes very small. Tarsus nearly twice as long as the middle toe, densely clothed with soft short feathers, those on the posterior face inclined upwards; toes scantily bristled; claws extremely sharp and long, the middle one with its inner edge pectinated. Ear-conch nearly as long as the height of the head, with an anterior operculum which does not extend its full length; the two ears symmetrical?

Strix pratincola Bonap.

AMERICAN BARN OWL.

Popular synonyms. Monkey Owl; Monkey-faced Owl.

Strix flammea "Linn." Wils. Am. Orn. vi, 1812, 57, pl. 50, fig. 2.—Nutt. Man. i, 1832, 139.—Aud. Orn. Biog. ii, 1834, 403; v, 1839, 388, pl. 171.
Strix pratincola Bp. Comp. Dist. 1838, 7.—Cass. in Baird's B. N. Am. 1858, 47.—Baird, Cat. N. Am. B. 1859, No. 47.
Strix flammea var. *pratincola* B. B. & R. Hist. N. Am. B. iii, 1874, 13.
Aluco flammeus pratincola Coues, 2d Check List, 1882, No. 461.
Strix americana Aud. Synop. 1899, 25; B. Am. i, 1840, 127, pl. 34.
Strix flammea americana Schleg, 1862.
Strix flammea var. *americana* Coues, Key, 1872, 201; Check List, 1873, No. 316.

Strix flammea d. *americana* COUES, B. N. W. 1874, 298.
Aluco flammeus americanus RIDGW. Nom. N. Am. B. 1881, No. 394.

HAB. United States generally, but more rare northward, and wanting in unwooded districts; south through Mexico; north, occasionally, to Canada.

SP. CHAR. *Usual plumage.* Ground-color of the upper parts bright orange-ochraceous; this overlaid in cloudings, on nearly the whole of the surface, with a delicate mottling of blackish and white, the mottling continuous on the back and inner scapulars, and on the ends of the primaries more faint, while along their edges it is more in the form of fine dusky dots, thickly sprinkled. Each feather of the mottled surface (excepting the secondaries and primaries) has a median dash of black, enclosing a roundish or cordate spot of white near the end of the feather; on the secondaries and primaries the mottling is condensed into indistinct tranverse bands, which are about four in number on the former and five on the latter; primary coverts deeper orange-rufous than the other portions, the mottling principally at their ends. Tail orange-ochraceous, finely mottled—most densely terminally—with dusky, fading into whitish at the tip, and crossed by about five distinct bands of mottled dusky. Face white, tinged with wine-red; an anteorbital spot of dark claret-brown, this narrowly surrounding the eye; facial circle, from forehead down to the ears (behind which it is white for an inch or so) soft orange-ochraceous, similar to the ground-color of the upper parts, the lower half (from ears across the throat) deeper ochraceous, the tips of the feathers blackish, the latter sometimes predominating. Lower parts snowy white, but this more or less overlaid with a tinge of fine orange-ochraceous, lighter than the tint of the upper parts; and, excepting on the jugulum, anal region, and crissum, with numerous minute but distinct specks of black; under surface of wings delicate yellowish white, the lining sparsely sprinkled with black dots; inner webs of primaries with tranverse bars of mottled dusky near their ends.

Extreme plumages. Darkest (Male, No. 6,884, Tejon Valley, Cal.; Dr. Heermann): There is no white whatever on the plumage, the lower parts being continuous light ochraceous; the tibiæ have numerous round spots of blackish. Lightest (No. 6,885, same locality): Face and entire lower parts immaculate snow-white; facial circle white, with the tips of the feathers orange; the secondaries, primaries, and tail show no bars, their surface being uniformly and finely mottled.

Measurements. (Male, No. 6,884, Tejon Valley, Cal.; Dr. Heermann): Wing, 13.00; tail, 5.70; culmen, .90; tarsus, 2.50; middle toe, 1.25. Wing formula, 2, 1-3. Among the very numerous specimens in the collection, there is not one marked female. The extremes of a large series are as follows: Wing, 12.50–14.00; tail, 5.70–7.50; culmen, .90–1.10; tarsus, 2.55–3.00.

The American Barn Owl, although generally distributed and in some localities common or even abundant, is by no means well known to the general public. It is the bird which has figured so often in the newspapers as the rare, remarkable, or anomalous "Monkey-faced Owl"—"only two specimens known," "Barnum offered five hundred dollars for this one," etc., with variations, according to circumstances. It is rather a southern bird, being rarely, if ever, found north of the Great Lakes, while it is probably common nowhere north of the parallel of 40°, except perhaps in California.

Regarding its habits, it may be said that it is decidedly nocturnal, like many other owls, and that it has a special predilection for church towers and abandoned or little frequented buildings of

various kinds. It is a most useful bird, destroying large numbers of rats and mice, which are its principal food, and seldom, if ever, molesting poultry, even domestic pigeons often nesting in its company without fear of molestation. Of this there is plenty of evidence on record, as for example the following, by Mr. R. T. Shepherd, of Monroe, Ohio, published in the *Ornithologist and Oölogist* for October, 1884, p. 124.

"The Barn Owl is undoubtedly a very useful bird to the farmer, having as it has, an almost unlimited penchant for rats and mice. Two or three pairs of these birds would in the course of a year destroy many hundreds of these pests that infest our barns and grain sheds. I quote the following from Mr. Dury's article on the Barn Owl in the Cincinnati Natural History Journal: 'On going up into the tower of the 'town hall' of the village of Glendale,' (where several of these owls were secured the past year,) 'I was astonished at the sight presented. The floor and ledges were covered with the cast-up pellets of the birds. There were hundreds of these pellets, and they must have contained the *débris* of several thousand rats and mice.' This is certainly evidence of the economic value of these birds. Mr. Dury also states that he found them living in harmony with the several pairs of tame pigeons which had their quarters in the tower."

Family BUBONIDÆ.—The Owls.

The characters of this family having been given with sufficient detail on page 399, they need not be repeated nor enlarged upon here. The North American genera may be distinguished as follows:

A. External ear excessively large (extending almost entirely across the head) furnished with an operculum or "flap" along the anterior margin, those of the opposite sides very unlike in form; skull also in some genera very asymmetrical. (*Asioninæ.*)

a. Size medium to very large (wing 11.50 inches or more).

1. **Asio.** Size medium (wing 11.50–13.00 inches); cere large and arched, its length on top exceeding the chord of the culmen; nostrils large, horizontally oval, opening laterally; only one to two outer quills with inner webs emarginated; head proportionally small, the ear-tufts variable as to development.
2. **Syrnium.** Size medium, or rather large (wing 12 inches or more); cere on top shorter than chord of culmen; nostril comparatively small, nearly circular; four or five outer primaries with inner webs emarginated; head proportionally large, with no indication whatever of ear-tufts. Toes partly or entirely naked. Eyes moderately large, black, or dark brown.
3. **Scotiaptex.** Size very large (wing 16.00 or more); cere on top longer than chord of culmen, the nostrils as in *Syrnium*; six outer quills with inner webs emarginated; head large, and without trace of ear-tufts. Toes densely clothed with long hair-like feathers. Eyes small, yellow.

b. Size very small (wing less than 8 inches).

4. **Nyctala.** Cere on top decidedly shorter than chord of culmen; nostrils small, vertically oval, opening in anterior edge of the inflated membrane; two outer quills with inner webs emarginated; head proportionally very large, without distinct ear-tufts.

B. External ear small, vertically oval, or nearly circular, without operculum, the two of opposite sides not differing in size or contour; skull always symmetrical. (*Buboninæ.*)

a. Nostrils opening in the anterior edge of the flat nasal membrane.

§ Tail even, or very slightly rounded, not more than half as long as the wing.

5. **Megascops.** Size small (wing less than 8.00 inches). Two to five quills with inner webs emarginated, the second to the fifth longest. Bill weak, light-colored; iris usually yellow (said to be brown in *M. flammeolus*). Ear-conch elliptical, about one third the height of the head, with a slightly elevated fringed anterior margin. Ear-tufts usually well developed.
6. **Bubo.** Size large (wing 12.00 inches or more). Two or three outer quills with inner webs emarginated, the third or fourth quills longest. Bill robust, black; iris usually yellow (brown in *B. mexicanus*). Ear-conch as in *Megascops*, but without the elevated anterior margin, and from one third to one half the height of the skull. Ear-tufts well developed; lower tail-coverts not reaching end of tail; toes covered with short feathers, the claws (and sometimes the terminal scutellæ) wholly exposed; bill not concealed by loral bristles.

7. **Nyctea.** Size very large (wing 15.00 inches or more). Four outer quills with inner webs emarginated. Lower tail-coverts reaching end of tail; toes densely covered with long hair-like feathers which almost completely hide the claws; bill nearly concealed by the loral feathers. Ear-tufts rudimentary. (Otherwise similar to *Bubo*.)

§§ Tail much graduated, nearly as long as the wing.

8. **Surnia.** Size rather small (wing about 9 inches). Four outer quills with inner webs emarginated, the third longest. Bill strong, yellow; iris bright yellow. Ear-conch oval, simple, less than the diameter of the eye. No ear-tufts.

b. Nostril opening back from the anterior margin of the much inflated nasal membrane; usually small and circular.

§ Tarsus little if any longer than the middle toe; first quill shorter than tenth.

9. **Glaucidium.** Size very small (wing less than 4.50 inches). Tarsus about equal to the middle toe, densely feathered; tail much more than half the wing, rounded; third or fourth quill longest, the outer four with inner webs emarginated; bill pale colored; iris yellow.

10. **Micrathene.** Size very small (wing less than 4.50 inches). Tarsus a little longer than middle toe, scantily haired; tail less than half the wing, even; fourth quill longest, the outer four with inner webs emarginated; bill pale colored, iris yellow.

§§ Tarsus more than twice as long as the middle toe; first quill longer than the sixth.

11. **Speotyto.** Size moderately small (wing about 7.00 inches). Tarsus closely feathered in front nearly or quite to the toes, naked behind; tail less than half the wing, slightly rounded; bill light colored; iris yellow.

Genus **ASIO** Brisson.

Asio Briss. Orn. i, 1760, 28. Type, *Strix otus* Linn.

Otus Cuv. Lec. Anat. Comp. 1799, tab. ii. Same type.

Brachyotus Gould, P. Z. S. 1837, 10. Type *Strix brachyotus* Forst.,=*S. accipitrina* Pall.

Gen. Char. Size medium. Ear-tufts well developed or rudimentary; head small; eyes small. Cere much arched, its length more than the chord of the culmen. Bill weak, compressed. Only the first, or first and second, outer primary with inner web emarginated. Tail about half the wing, rounded. Ear-conch very large, about as long as the height of the skull, with an anterior operculum, which extends its full length, and bordered posteriorly by a raised membrance, the two ears asymmetrical.

The two North American species belong to distinct subgenera, as follows:

A. Ear-tufts greatly developed. (*Asio*.)

1. **A. wilsonianus.** Above finely-vermiculated dusky brown and light grayish, the former prevailing; lower parts whitish (buffy beneath the surface), marked with transverse dusky bars, which are much broader than the mesial streaks.

B. Ear-tufts rudimentary. (*Brachyotus*.)

2. **A. accipitrinus.** Ground-color (above and below) ochraceous, varying to buffy whitish, striped, but not barred, with dark brown.

The subgenus *Asio* has but one other representative, as far as known, in America. This is the *A. stygius* (Wagl.) of the tropical regions (including Cuba), which differs from *A. wilsonianus* in much darker color, perfectly naked toes, and attenuated tips to the outer primaries. *A. wilsonianus* has a close ally in *A. otus* of the Palæ-

arctic region, but is sufficiently distinct. Of the subgenus *Brachyotus* there are two American species besides the nearly cosmopolitan *A. accipitrinus*, namely, *A. galapagoensis* GOULD, confined to the Galapagos Islands, and *A. portoricensis* RIDGW., peculiar to the island of Porto Rico.

Asio wilsonianus (Less.)

AMERICAN LONG-EARED OWL.

Popular synonym. Lesser Horned Owl.

Strix otus WILS. Am. Orn. vii, 1812, 73, pl. 51, fig. 3 (*nec* LINN).—NUTT. Man. I, 1832, 130.—AUD. Orn. Biog. iv, 1835, 573, pl. 83.

Strix (*Asio*) *otus* SW. & RICH. F. B.-A. ii, 1831, 72.

Otus wilsonianus LESS. Traité, i, 1831, 110.—CASS. in Baird's B. N. Am. 1858, 53.—BAIRD, Cat. N. Am. B. 1859, No. 51.

Otus vulgaris var. *wilsonianus* ALLEN, 1872.—COUES, Key, 1872, 204; Check List, 1873, No. 320.—B. B. & R. Hist. N. Am. B. iii, 1874, 18.

Otus vulgaris b. *wilsonianus* COUES, B. N. W. 1874, 304.

Asio wilsonianus COUES, 2d Check List, 1882, No. 472.

Otus vulgaris americanus SCHLEG. 1862. (*Nec Strix americana* GMEL.)

Asio otus, subsp. a. *Asio americanus* SHARPE, Cat. B. Brit. Mus. ii, 1875, 229.

Asio americanus RIDGW. Nom. N. Am. B. 1881, No. 395.

HAB. North America in general north to the limit of forests, south to Mexican tablelands.

SP. CHAR. *Adult.* Upper surface transversely mottled with blackish brown and grayish white, the former predominating, especially on the dorsal region; feathers of the nape and wings ochraceous beneath the surface; lower scapulars with a few obsolete spots of white on lower webs. Primary coverts dusky, with transverse series of dark mottled grayish spots, these becoming somewhat ochraceous basally; ground color of the primaries grayish, this especially prevalent on the inner quills; the basal third (or less) of all ochraceous, this decreasing in extent on inner feathers, the grayish tint everywhere finely mottled transversely with dusky, but the ochraceous unvaried; primaries crossed by a series of about seven quadrate blackish brown spots, these anteriorly about as wide as the intervening yellowish or mottled grayish; the interval between the primary coverts and the first of these spots about .80 to 1.00 inch on the fourth quill, the spots on the inner and outer feathers approaching the coverts, or even underlying them; the inner primaries—or, in fact, the general exposed surface—with much narrower bars of dusky. Ground color of the wings like the back, this growing paler on the outer feathers, and becoming ochraceous basally, the tip approaching whitish; secondaries crossed by nine or ten narrow bands of dusky.

Ear-tufts with the lateral portion of each web ochraceous, this becoming white, somewhat variegated with black, toward the end of the inner webs, on which the ochraceous is broadest; median portion clear, unvariegated black. Forehead and postauricular disk minutely speckled with blackish and white; facial circle continuous black, becoming broken into a variegated collar across the throat. "Eyebrows" and lores grayish white; eye surrounded with blackish, this broadest anteriorly above and below, the posterior half being like the ear-coverts. Face plain ochraceous; chin and upper part of the throat immaculate white. Ground-color below pale ochraceous, the exposed surface of the feathers, however, white; breast with broad longitudinal blotches of clear dark brown; each feather and sides and flanks marked with a median stripe, crossed by as broad, or broader, transverse bars, of blackish brown; abdomen, tibial plumes, and legs plain ochraceous, becoming nearly white on the lower part of tarsus and on the toes; tibial

plumes with a few sagittate marks of brownish; lower tail-coverts each with a median sagittate mark of dusky, this continuing along the shaft, forking toward the base. Lining of the wing plain pale ochraceous; inner primary coverts blackish brown, forming a conspicuous spot.

Wing, 11.50-12.00; tail, 6.00-6.20; culmen, .65; tarsus, 1.20; middle toe, 1.15.

Young. Wings and tail as in the adult; other portions transversely banded with blackish brown and grayish white, the latter prevailing anteriorly; eyebrows and loral bristles entirely black; legs white.

Western specimens apparently average decidedly grayer than eastern ones, some of the latter being very much darker than any I have seen from the West.

The American Long-eared Owl is closely related to the European *A. otus*, but seems sufficiently distinct. The latter has the upper parts striped, instead of confusedly mottled, with dusky; the lower parts ochraceous on the surface, relieved by ragged longitudinal stripes (but not distinct bars), of dusky.

The Long-eared Owl is a species of very extensive distribution, yet few of our owls are less generally known. This arises from its strictly nocturnal habits and its predilection for special localities, such as are not everywhere to be found. Its favorite haunts are dense willow thickets, where it may be surprised taking its day-time nap, standing bolt upright, with feathers closely pressed to its body, and long ear-tufts erect, thus presenting a very comical figure.

"The usual number of eggs laid by the Long-eared Owl on the Pacific coast is five, although six in a set are by no means rare. When fresh, the eggs are of a bright white color. They are about equally rounded on both ends and rather globular in shape. They average about 1.60 inches in length by 1.32 inches wide, and vary considerably in size, but rarely in shape. The Long-eared Owl commences laying during the first week in April, and I believe that they rear but a single brood in a season. They will lay a second and sometimes a third set after losing their first one, and will occupy the same nest for several seasons, if not too often disturbed. The eggs are hatched in about sixteen days, and the young for the first two weeks are covered with a thick grayish down. Their food consists principally of mice and the smaller rodents, and I doubt if they are guilty of catching small birds." (Capt. C. E. Bendire, in *Ornithologist and Oölogist.*)

Subgenus **Brachyotus** Gould.

Asio accipitrinus (Pall.)

SHORT-EARED OWL.

Popular synonyms. Marsh Owl; Meadow Owl; Prairie Owl.

Strix accipitrina Pall. Reise. Russ. Reichs. i, 1771-76, 455.
Asio accipitrinus Newt. ed. Yarrell's Brit. B. i, 1872, 163.—Ridgw. Nom. N. Am. B. 1881. No. 396.—Coues, 2d Check List, 1882, No. 473.
Strix brachyotus Forst. Phil. Trans. lxii, 1772, 384.—Wils. Am. Orn. iv, 1812, 64, pl. 33, fig. 3.—Nutt. Man. i, 1832, 132, Aud. Orn. Biog. v, 1839, 273, pl. 432.
Otus brachyotus Boie, 1822.—Aud. Synop. 1839, 28; B. Am. i, 1840. pl. 38.
Otus (*Brachyotus*) *brachyotus* B. B. & R. Hist. N. Am. B. iii, 1874, 22.
Strix palustris Bechst. Nat. Deutschl. ii, 1791, 344.
Brachyotus palustris Bp. 1838.—Coues, Key, 1872, 204; Check List, 1874, No. 321; B. N. W. 1874, 306.
Brachyotus cassini Brewer, Proc. Bost. Soc. Nat. Hist. 1856, 321.—Cass. in Baird's B. N. Am. 1858, 54.—Baird, Cat. N. Am. B. 1859, No. 52.

Hab. Nearly cosmopolitan; whole Northern Hemisphere, including Sandwich Islands, and all of America, from Arctic coast to Cape Horn. (Replaced, however, in Porto Rico and Galapagos by *A. portoricensis* and *A. galapagoensis*, respectively.)

Sp. Char. *Adult.* Ground-color of the head, neck, back, scapulars, rump, and lower parts, pale ochraceous; each feather (except on the rump) with a median longitudinal stripe of blackish brown—this broadest on the scapulars; on the back, nape, occiput, and jugulum, the two colors about equal; on the lower parts, the stripes grow narrower posteriorly, those on the abdomen and sides being in the form of narrow lines. The flanks, legs, anal region, and lower tail coverts are always perfectly immaculate; the legs most deeply ochraceous, the lower tail-coverts nearly pure white. The rump has indistinct crescentic marks of brownish. The wings are variegated with the general dusky and ochraceous tints, but the markings are more irregular, the yellowish in form of indentations or confluent spots, approaching the shafts from the edge—broadest on the outer webs. Secondaries crossed by about five bands of ochraceous, the last terminal; primary coverts plain blackish brown, with one or two poorly defined transverse series of ochraceous spots on the basal portion. Primaries ochraceous on the basal two thirds, the terminal portion clear dark brown, the tips (broadly) pale brownish yellowish, this becoming obsolete on the longest; the dusky extends toward the bases, in three to five irregularly transverse series of quadrate spots on the outer webs, leaving, however, a large basal area plain ochraceous, this somewhat more whitish anteriorly. The ground-color of the tail is ochraceous, becoming whitish exteriorly and terminally, crossed by five broad bands (about equaling the ochraceous, but becoming narrower toward outer feathers) of blackish brown; on the middle feathers, the ochraceous spots enclose smaller, central transverse spots of blackish; the terminal ochraceous band is broadest. Eyebrows, lores, chin, and throat soiled white, the loral bristles with black shafts; face dingy ochraceous white, feathers with darker shafts; eye broadly encircled with black. Postorbital circle minutely speckled with pale ochraceous and blackish, except immediately behind the ear, where for about an inch it is uniform dusky. Lining of the wing immaculate delicate yellowish white; terminal half of under primary coverts clear blackish brown; under surface of primaries plain delicate ochraceous white; ends and one or two very broad anterior bands, dusky. Wing, 11.80-13.00; tail, 5.80-6.10; culmen, .60-.65; tarsus, 1.75; middle toe, 1.20.

Probably no land bird has so extensive a range as the present species, occurring as it does throughout all the grand divisions of the earth's surface, except Australia, and also on many of the Polynesian islands. In America it is found everywhere in suitable localities, from Alaska and Greenland to Cape Horn.

Notwithstanding the fact that this species has an almost cosmopolitan range (the Australian region being almost the only part of the world where it is wanting), and also that great variations are noticeable in the plumage of the different individuals, I am convinced of the futility of any attempt to separate, as races even, the birds from different countries. In this connection the reader is referred to Vol. IV., of the "Proceedings" of the U. S. National Museum, pp. 366–371, where the subject is treated in detail.

In Illinois the Short-eared Owl occurs in all open grassy situations, either as a winter visitant or resident, and is particularly common on the prairies. Mr. Nelson says (in *Bull. Essex Inst.* Vol. VIII., p. 117,) the following of it as observed by him in the northeastern portion of the State:

"The most abundant species of the family. Arrives from the north in large numbers the first of November, and disperses through the State. They are common everywhere, on prairies and marshes, during the winter. Remain concealed in a bunch of grass or reeds until about two o'clock p. m., when they commence flying low over the ground in search of their prey. When approached, while standing on the ground, they crouch and try to escape observation, much in the manner of the Burrowing Owl. They are very harmless, and are easily tamed."

Genus **SYRNIUM** Savigny.

Syrnium Savigny, Desc. de l'Egypte, 1809,298, *et* Auctorum. Type (by elimination), *S. stridula* Linn.,=*S. aluco* Linn.

Gen. Char. Size varying from medium to very large. No ear-tufts. Head very large; the eyes comparatively small. Five outer primaries, with their inner webs sinuated. Tarsi and upper portion of the toes densely clothed with hair-like feathers—the toes, however, sometimes entirely naked. Tail considerably more than half as long as the wing, decidedly rounded. Ear orifice very high, but not as high as the skull, and furnished with an anterior operculum, which does not usually extend along the full length; the two ears asymmetrical. Bill yellow.

Syrnium nebulosum (Forst.)

BARRED OWL.

Popular synonym. Hoot Owl.

Strix nebulosa Forst. Phil. Trans. lxii, 1772, 386, 424.—Wils. Am. Orn. iv, 1812, 61, pl. 33, fig. 2.—Nutt. Man. i, 1832, 133.—Aud. Orn. Biog. i, 1832, 242; v, 1839, 386, pl. 46.—Ridgw. Nom. N. Am. B. 1881, No. 397.—Coues. 2d Check List, 1882, No. 476.

Syrnium nebulosum Boie, 1828.—Aud. Synop. 1839, 27; B. Am. i, 1840, 132, pl. 36.—Cass. in Baird's B. N. Am. 1858, 56.—Baird, Cat. N. Am. B. 1859, No. 54.—Coues, Key, 1872, 204; Check List, 1873, No. 323; B. N. W. 1874, 308 (*b. nebulosum*).—B. B. & R. Hist. N. Am. B. iii, 1874, 29 (var. *nebulosum*).

Hab. Eastern North America, north to Hudson's Bay, south to Georgia and eastern Texas, west to the edge of the Great Plains. (Replaced in Florida by *S. nebulosum alleni*, a race with perfectly naked toes and somewhat different coloration.)

Sp. Char. *Adult.* Head, neck, breast, back, scapulars, and rump with broad regular transverse bars of ochraceous white and deep umber-brown, the latter color always terminal; on the upper surface the brown somewhat exceeds the whitish in width, but on the neck and breast the white rather predominates. The lower third of the breast is somewhat differently marked from the upper portion, the brown bars being connected along the shafts of the feathers, throwing the white into pairs of spots on opposite webs. Each feather of the abdomen, sides, flanks, and lower tail-coverts has a broad median longitudinal stripe of brown somewhat deeper in tint than the transverse bars on the upper parts; the anal region is plain, more ochraceous, white; the legs have numerous, but rather faint, transverse spots of brown. Ground-color of the wings and tail brown, like the bars of the back; middle and secondary wing-coverts with roundish transverse spots of nearly pure white on lower webs; lesser coverts plain rich brown; secondaries crossed by six bands of pale grayish brown, passing into paler on the edge of each feather; primary coverts with four bands of darker ochraceous brown; primaries with transverse series of quadrate pale brown spots on the outer webs (growing deeper in tint on inner quills); on the longest are about eight. Tail, like the wings, crossed with six or seven sharply defined bands of pale brown, the last terminal. Face grayish white with concentric semicircular bars of brown; eyebrows and lores with black shafts; a narrow crescent of black against anterior angle of the eye. Facial circle of blackish brown and creamy white bars, the former prevailing along the anterior edge, the latter more distinct posteriorly, and prevailing across the neck in front, where the brown forms disconnected transverse spots. Bill deep wax- or dull chrome-yellow; iris brownish black, the pupil appearing dull blue by contrast; scutellæ of toes dull wax-yellow or grayish yellow; soles of toes deep dull chrome-yellow; claws black, or dark horn-color tipped with black.

Total length, 19.50–22.00 inches; extent, .44–.48; wing, 13.00–15.00; tail, about 9.00–10.00.

This is by far the most numerous species of owl in wooded portions of the State. It is familiarly known as the "Hoot Owl" on account of its well-known loud hooting call, generally interpreted as "*who—who, who, who—who, who, who, ar-r-r-r-e, you?*" although sometimes translated as "who cooks for you all?" This call is far louder than the deeper bass hooting of the Great Horned Owl, and is also more varied. Frequently it is preceded by a very loud, "blood-curdling" shriek, causing the hair of the uninitiated to rise on his

head and his knees to tremble for fear that a panther is prowling in the neighborhood. When several get together their nocturnal concerts are very entertaining. One appears to tell some joke or do something funny, at which the rest set up a hearty though demoniacal *he-he-he-he, hi-hi-hi-hi, ha-ha-ha-ha,*—and the uncanny company is boisterously hilarious for a few moments, when the solitude of night again reigns supreme.

The Barred Owl is less strictly nocturnal than the Great Horned Owl, Long-eared Owl, or Little Screech Owl, and may often be seen flying about during dark or cloudy weather. In fact, its call may often be heard in bright sunny days, and is then often the means of the bird's destruction, as perhaps no bird is more easily lured by a good imitation of its note,—and that of the present species is susceptible of very exact imitation.

Genus **SCOTIAPTEX** Swainson.

Scotiaptex Swains. Classif. B. ii, 1837, 217. Type *Strix cinerea* Gmel.

Gen. Char. Size large, although the body is very small in proportion to the length of the wing and tail. Head without ear-tufts. Six outer quills with inner webs emarginated. Toes completely and densely covered by long hair-like feathers.

Scotiaptex cinereum (Gmel.)

GREAT GRAY OWL.

Popular synonyms. Great Cinereous Owl; Great Sooty Owl; Spectral Owl.

Strix cinerea Gmel. S. N. i, pt. i, 1788,291.—Sw. & Rich. F. B. A. ii, 1831, 77, pl. 31.—Nutt. Man. i, 1832, 128.—Aud. Orn. Biog. iv, 1838, 364, pl. 351.—Coues, 2d Check List, 1882, No. 474.

Ulula cinerea Bp. Consp. i, 1850, 53 (part).—Ridgw. Nom. N. Am. B. 1881, No. 399.

Syrnium cinereum Bp. 1838.—Aud. Synop. 1839, 26; B. Am. i, 1840, 130, pl. 35.—Cass in Baird's B. N. Am. 1858, 56.—Baird, Cat. N. Am. B. 1859, No. 33.—Coues, Check List, 1873, App. p. 131; B. N. W. 1874, 307 (b. *cinereum*).

Syrnium lapponicum var. *cinereum* Coues, Key, 1872, 204; Check List, 1873, No. 322.

Syrnium (*Scotiaptex*) *cinereum* B. B. & R. Hist. N. Am. B. iii, 1874, 30.

Hab. Northern North America, south, in winter, to northern United States, as far as Massachusetts, Rhode Island, northern New York, northern Illinois, Minnesota, etc.; breeding as far south as Canada (*"Oölogist"*, v, 1880, p. 54).

Sp. Char. *Adult.* Ground-color of the upper surface dark vandyke-brown, but this relieved by a transverse mottling (on the edges of the feathers) of white, the median portions of the feathers being scarcely variegated, causing an appearance of indistinct longitudinal dark stripes these most conspicuous on the scapulars and back. The anterior portions above are more regularly barred transversely; the white bars interrupted however, by the brown median stripe. On the rump and and upper tail-coverts the mottling is more profuse, causing a grayish appearance. On the wing-coverts the outer webs

are most variegated by the white mottling. The alula and primary coverts have very indistinct bands of paler; the secondaries are crossed by nine bands (last terminal, and three concealed by coverts) of pale grayish brown, inclining to white at the borders of the spots; primaries crossed by nine transverse series of quadrate spots of mottled pale brownish gray on the outer webs, those beyond the emargination obscure,—the terminal crescentic bar distinct, however; upper secondaries and middle tail-feathers with coarse transverse mottling, almost forming bars. Tail with about nine paler bands, these merely marked off by parallel, nearly white bars, enclosing a plain grayish brown, sometimes slightly mottled, space, just perceptibly darker than the ground-color; basally the feathers become profusely mottled, so that the bands are confused; the last band is terminal. Beneath, the ground-color is grayish white, each feather of the neck, breast, and abdomen with a broad, longitudinal ragged stripe of dark brown, like the ground-color of the upper parts; sides, flanks, crissum, and lower tail-coverts with regular transverse narrow bands; legs with finer, more irregular, transverse bars of dusky. "Eyebrows," lores and chin grayish white; a dusky space at anterior angle of the eye; face grayish white, with distinct concentric semicircles of blackish brown; facial circle dark brown, becoming white across the foreneck, where it is divided medially by a spot of brownish black, covering the throat.

Wing, 16.00–18.00; tail, 11.00–13.00; culmen, 1.00; tarsus, 2.30; middle toe, 1.50.

The Old World form of this species(*cinereum lapponicum*) is much paler in coloration, the lighter markings predominating. The under side of the primaries shows a conspicuous patch of whitish, covering the basal portion of these feathers, this patch being much reduced in size or altogether wanting in the American race.

The Great Gray Owl is a northern bird of very rare or accidental occurrence in Illinois. It is given by Mr. Nelson (p. 117 of his list) as a very rare winter visitant to Cook county, but outside of this record we have no knowledge of its having been taken or observed anywhere in the State.

Genus **NYCTALA** Brehm.

Nyctala Brehm, Isis, 1828, 1271. Type, *Strix tengma'mi* Gmel.

Gen. Char. Size small. Head very large, without ear-tufts; eyes moderate; iris yellow. Two outer primaries with their inner webs distinctly emarginated. Tarsi and toes densely, but closely feathered. Ear-conch very large, nearly as high as the skull, with an anterior operculum; the two ears exceedingly asymmetrical, not only externally but in their osteological structure. Furcula not anchylosed posteriorly, but joined by a membrane.

The North American species of this genus are two in number, and may readily be distinguished from one another by the characters given in the following comparative diagnosis. One of them

is conspecific with the single Palæarctic species, *N. tengmalmi*. A third species, the *N. harrisi* CASSIN, belongs to northern South America (Colombia).

COM. CHAR. *Adults.* Above brown, more or less spotted with white; beneath white, broadly striped with reddish brown. *Young.* Above uniform brown, the wings and tail, however, marked with white, as in the adult. Face uniform dusky surmounted by conspicuous white "eyebrows." Lower parts uniform brown anteriorly, and uniform bright ochraceous posteriorly.

1. **N. tengmalmi richardsoni.** Wing, 7.20 inches or more; tail about 4.50; culmen, .60; tarsus, 1.00; middle toe, .67. Bill yellow.
2. **N. acadica.** Wing, 5.25-5.50; tail, 2.60-3.00; culmen, .45-.50; tarsus, .80; middle toe, .60-.65. Bill black.

Nyctala tengmalmi richardsoni (Bp.)

RICHARDSON'S OWL.

Popular synonym. Sparrow Owl.

Strix tengmalmi SW. & RICH. F. B.-A. ii, 1831, 94, pl. 82, (*nec* GMEL.).—NUTT. Man. i, 1832, 562.—AUD. Orn. Biog. iv, 559, pl. 380.

Ulula tengmalmi AUD. Synop. 1829, 24; B. Am. i, 1840, 122, pl. 32.

Nyctale richardsoni BONAP. Comp. List, 1838, 7.—CASS. in Baird's B. N. Am. 1858, 57.—BAIRD, Cat. N. Am. B. 1859, No. 55.

Nyctale tengmalmi var. *richardsoni* RIDGW.—COUES, Key, 1872, 205; Check List, 1874, No. 327; B. N. W. 1874, 313.—B. B. & R. Hist. N. Am. B. iii, 1874, 40.

Nyctale tengmalmi richardsoni RIDGW. Nom. N. Am. B. 1881, No. 400.—COUES, 2d Check List, 1882, No. 482.

HAB. Northern North America; south, in winter, to New England (New Hampshire, Massachusetts, and Rhode Island), Wisconsin, northern Illinois, and Oregon.

SP. CHAR. *Adult.* Upper surface brownish olive or umber-brown. Forehead and crown with numerous elliptical (longitudinal) marks of white, feathers everywhere with large partly concealed spots of the same; these spots largest on the neck and scapulars —on the latter of a roundish form, the outer webs of those next the wing being almost wholly white, the edge only brown; on the nape the spots form V-shaped marks, the spots themselves being somewhat pointed; below this is a transverse, less distinct collar, of more concealed spots; wing-coverts, toward the edge of the wing, with a few large, nearly circular, white spots; secondaries with two transverse series of smaller white spots, these crossing about the middle, remote from the end and base; outer feathers of the alula with two white spots along the margin; primary coverts plain; primaries with four or five transverse series of white spots; tail with the same number of narrow transverse spots, forming interrupted bands, the spots not touching the shaft—the last spot not terminal. Facial circle much darker brown than the crown, and speckled with irregular spots of white, these either median or upon only one web; across the throat the circle becomes paler brown, without the white spotting. Eyebrows and face grayish white; lores and eyelids blackish. Lower parts white, becoming pale ochraceous on the legs; sides of the breast, sides, flanks, and lower tail-coverts with daubs of brown (slightly lighter and more reddish than on the back), those of the breast somewhat transverse, but the posterior ones decidedly longitudinal; front of tarsus clouded with brown. Wing, about 7.20; tail, 4.50; culmen, .60; tarsus, 1.00; middle toe, .97.

A female from Alaska (No. 49,802, Nulato, April 28, 1866; W. H. Dall) is considerably darker than the specimen described above; the occiput has numerous circular spots of white, and the tarsi are more thickly spotted; no other differences, however, are appreciable. Two specimens from Quebec (Nos. 17,064 and 17,065; Wm. Couper) are exactly similar to the last, but the numerous white spots on the forehead are circular.

Young. Above uniform dark brown, the sides of the forehead, back to the eyes, and a space beneath the eye to the base of the bill, white; lower parts, from breast back, uniform fulvous or tawny ochraceous.

This species was included among the "probabilities" in my catalogue of 1881 (p. 207), having been taken by Dr. Hoy near Racine, Wisconsin, and being included in Mr. Allen's catalogue of the birds of Iowa. Its only claim, to date, to being a member of the Illinois fauna is the following record, in the *Ornithologist and Oölogist* (Pawtucket, R. I.) for March, 1885, p. 47, by J. E. Dickinson, of Rockford, Winnebago county:

"Captured one Richardson's Owl, October 15, 1884. He flew against a store window and was slightly stunned."

Nyctala acadica (Gmel.)

SAW-WHET OWL.

Popular synonyms. Acadian Owl; White-fronted Owl; Kirtland's Owl.

Strix acadica GMEL. S. N. i, pl. i, 1788, 296.—NUTT. Man. i, 1832, 137.—AUD. Orn. Biog. ii, 1834, 567; v, 1839, 397, pl. 199.

Nyctale acadica BP. 1838.—CASS. in Baird's B. N. Am. 1858, 58.—BAIRD, Cat. N. Am. B. 1859, No. 56.—COUES, Key, 1872, 205; Check List, 1873, No. 328; 2d ed. 1882, No. 483; B. N. W. 1874, 315.—B. B. & R. Hist. N. Am. B. iii, 1874, 43.—RIDGW. Nom. N. Am. B. 1881, No. 401.

Ulula acadica AUD. Synop. 1839, 24; B. Am. i, 1840, 123, pl. 33.

Strix albifrons SHAW, Nat. Misc. v, 1794, pl. 171.

Nyctale albifrons CASS. in Baird's B. N. Am. 1858, 57.—BAIRD, Cat. N. Am. B. 1859, No. 57.

Strix passerina WILS. Am. Orn. iv, 1812, 66, pl. 34, fig. 1, (*nec* LINN.)

Nyctale kirtlandi HOY. Proc. Phila. Acad. vi, 1852, 210.—CASS. Illustr. 1853, 63, pl. 11.

HAB. Northern United States and British Provinces; south to about 40° (or a little beyond) in Eastern Province, but in Western Province entirely across into Mexico, on high mountain ranges, and south to Oaxaca.

SP. CHAR. *Adult female* (No. 120,044, Washington, D. C., Feb., 1859: C. Drexler). Upper surface plain soft reddish olive, almost exactly as in *N. richardsoni*; each feather of forehead, anterior part of the crown, and the facial circle, marked with a short median line of white; feathers of the neck white beneath the surface, forming a collar of blotches; lower webs of scapulars white bordered with brown; wing-coverts with a few rounded white spots; alula with the outer feathers broadly edged with white. Primary coverts and secondaries perfectly plain; five outer primaries with semi-rounded white spots on the outer webs, these decreasing toward the ends of the feathers, leaving but about four series well defined. Tail crossed by three widely separated narrow bands of white, formed of spots not touching the shaft on either web; the last band is terminal. "Eyebrow" and sides of the throat white; lores with a blackish suffusion, this more concentrated around the eye; face dirty white, feathers indistinctly edged with brownish, causing an indistinctly streaked appearance: the facial circle in its extension across the throat converted into reddish umber spots. Lower parts, generally, silky white, becom-

ing fine ochraceous on the tibiæ and tarsi; sides of the breast like the back, but of a more reddish or burnt-sienna tint; sides and flanks with longitudinal daubs of the same; chest, abdomen, lower tail-coverts, tarsi, and tibiæ, immaculate. Wing formula, 4-3-5-1-8. Wing, 5.40; tail, 2.80; culmen, .50; tarsus, .80; middle toe, .60.

Seven specimens before me vary in length of wing from 5.25 to 5.80; tail 2.60 to 3.00 (female). The largest specimen is 12,053 (female, Fort Tejon, California: J. Xantus). This differs from the specimen described, in whiter face, more conspicuous white streaks on forehead, smaller, less numerous, red spots below, and in having a fourth white band on the tail; this, however, is very inconspicuous. There are no authentic males before me, though only two are marked as females; the extremes of the series probably represent the sexual discrepancy in size.

Young male (No. 12,814, Racine, Wisconsin, July, 1859; Dr. P. R. Hoy): Upper surface continuous plain dark sepia-olive; face darker, approaching sooty blackish, perfectly uniform; around the edge of the forehead, a few shaft-lines of white; scapulars with a concealed spot of pale ochraceous on lower webs; lower feathers of wing-coverts with a few white spots; outer feather of the alula scalloped with white; primary coverts perfectly plain; five outer primaries with white spots on outer webs, these diminishing toward the end of the feathers, leaving only two or three series well defined; tail darker than the wings, with three narrow bands composed of white spots, these not touching the shaft on either web. "Eyebrows" immaculate white, lores more dusky; face and eyelids dark sooty brown; sides of the chin white. Throat and whole breast like the back, but the latter paler medially, becoming here more fulvous; rest of the lower parts plain fulvous ochraceous, growing gradually paler posteriorly. Lining of the wing plain dull white; under surface of primaries with dusky prevailing, but this crossed by bands of large whitish spots; the three outer feathers, however, present a nearly uniform dusky aspect, being varied only basally. Wing formula, 3, 4-2-5-6-7, 1. Wing, 5.50; tail, 2.80; culmen, .45; tarsus, .80; middle toe, .65.

This handsome little owl is not an uncommon resident of the more northern portions of the State and occasionally makes its appearance during winter in the southern counties. According to Mr. Nelson (p. 117 of his list), it is "not an uncommon species" in Cook county, being "of frequent occurrence in Chicago, where, upon some of the most frequented streets in the residence portion of the town, over a dozen specimens have been taken within two years." Mr. H. K. Coale, of Chicago, informs me that he has examined or skinned thirty specimens in ten years.

Genus **MEGASCOPS** Kaup.

Scops Savign. Desc. de l'Egypte, 1809, 291. Type, *Strix scops* Linn. (*Nec* Brunn. 1772.)
Megascops Kaup, Isis, 1848, 765. Type, *Strix asio* Linn.

Gen. Char. Small owls with distinct ear-tufts, the tarsus more or less feathered (usually completely feathered) the wings ample (more than twice the length of the short, slightly rounded tail), the plumage exceedingly variegated with vermiculations, cross-bars, and mottlings; toes naked or bristled—never completely feathered, except toward the base.

The above brief diagnosis is sufficient to characterize this group. In general aspect the species of this genus are miniatures of those which belong to the genus *Bubo*, and are perhaps as nearly related structurally to the latter as to any other members of the family.

All the American species have the outer webs of the scapulars mostly light-colored (generally white, with a blackish terminal border—rusty ochraceous in *flammeolus* and the darker forms of *brasilianus*), producing a more or less distinct stripe along each side of the dorsal region; the feathers of the upper and lower parts usually have blackish shaft-streaks, those beneath generally with narrow transverse bars; outer webs of the remiges with light-colored spots, and the tail more or less (never sharply) banded. Nearly all the species are, in some part of their range, dichromatic, having a bright rufous phase, quite different from the "normal" grayish plumage.

Megascops asio (Linn.)

SCREECH OWL.

Popular synonyms. Little Mottled Owl; Little Red Owl.

Strix asio Linn. S. N. ed. 12, i, 1766, 132.—Wils. Am. Orn. v, 1812, 83, pl. 42, fig. 1.—Aud. Orn. Biog. i, 1832, 486; v, 1839, 392, pl. 97.—Nutt. Man. i, 1832, 120.
Scops asio Bp. 1838.—Cass. in Baird's B. N. Am. 1858, 51.—Baird, Cat. N. Am. B. 1859, No. 49.—Coues, Key, 1872, 202; Check List, 1873, No. 318; 2d ed. 1882, No. 465; B. N. W. 1874, 303.—B. B. & R. Hist. N. Am. B. iii, 1874, 49.—Ridgw. Nom. N. Am. B. 1881, No. 402.
Bubo asio Vieill. 1807.—Aud. Synop. 1839, 29; B. Am. i, 1840, 147, pl. 40.
Strix nævia Gmel. S. N. i, pt. i, 1788, 289.—Wils. Am. Orn. iii, 1812, 16, pl. 19, fig. 1.

Hab. Eastern United States and British Provinces, west to edge of the Great Plains. (In Florida replaced by *M. asio floridanus* and in southern Texas by *M. asio maccalli*.)

a. Normal plumage.

Sp. Char. *Adult.* Ground-color above brownish cinereous, palest on the head, purest ashy on the wings, minutely mottled with fine zigzag transverse bars of black, each feather with a median ragged stripe of the same along the shaft. Inner webs of ear-tufts, outer webs of scapulars, and spots occupying most of the outer webs of the two or three lower feathers of the middle and secondary wing-coverts, white, forming (except on the first) conspicuous spots, those of the scapulars bordered with black. Secondaries crossed with about seven regular paler bands, each enclosing a more irregular dusky

one; the ground-color, however, so mottled with grayish, and the pale bands with dusky, that they are by no means sharply defined or conspicuous, though they are very regular; alula and primary coverts more sharply barred with cream-colored spots, those on the former nearly white; primaries with broad quadrate spots of creamy white on outer webs, these forming from seven to eight transverse bands, the last of which is not terminal. Tail more irregularly mottled than the wings, and crossed by seven to eight narrow, indistinct, but continuous pale bands. Eyebrows white, the feathers bordered with dusky; cheeks, ear-coverts, and lower throat dull white, with transverse bars of blackish; chin immaculate; upper eyelid dark brown; facial circle black; neck and jugulum like the cheeks, but more strongly barred, and with blackish along the shaft. Ground-color of the lower parts white, each feather with a median stripe of black, this throwing off distinct bars to the edge of the feathers; the median black is largest on sides of the breast, where it expands into very large conspicuous spots, having a slight rusty exterior suffusion; the abdomen medially, the anal region, and the lower tail-coverts are almost unvaried white. Tibiæ and tarsi dull white, much barred transversely with blackish, or pale ochraceous, more sparsely barred with dark brownish. Lining of the wing creamy white, varied only along the edge; light bars on under surface of primaries very indistinct.

b. Rufescent plumage.

Adult. General pattern of the preceding, but the grayish tints replaced by lateritious rufous, very fine and bright, often with a slight vinaceous cast; this is often uniform, showing no trace of the transverse dark mottling; there are, however, black shaft-lines to the feathers (these most conspicuous on the head above, and scapulars, and narrower and more sharply defined than in the gray plumage). The inner webs of the ear-tufts, outer webs of scapulars, and lower secondary and middle wing-coverts, are white, as in the gray plumage; those of the scapulars are also bordered with black. The secondaries, primaries, and tail are less bright rufous than the other portions, the markings as in the gray plumage, only the colors being different. The upper eyelid, and, in fact, all around the eye, fine light rufous; cheeks and ear-coverts paler, scarcely variegated. Lower parts without the transverse bars of the gray plumage, but in their place an irregular clouding of fine light rufous, like the back: the lower parts medially (very broadly) immaculate snowy white; most of the feathers having the red spotting show black shaft-stripes, but the pectoral spots are not nearly so large or conspicuous as in the gray bird. Tibiæ fine pale ochraceous rufous; tarsi the same posteriorly, in front white with cuneate specks of rufous; lower tail-coverts each with a median transversely cordate spot of dilute rufous, the shaft black. Lining of the wing with numerous rufous spots.

Young. Wings and tail as in adult; markings on head and body as in the young gray bird, but white bars more reddish, and dark ones more brown.

Two adult males obtained at Mt. Carmel, Illinois, measured, when fresh, as follows: *Gray specimen.* Total length, 7.50 inches; extent, 19.50 inches. *Rufous specimen* (January 21, 1867): Total length, 8.25 inches; extent, 21.50. Two adult females from the same locality measured, respectively, 9 inches in length by 21.50 in extent, and 9 by 23 inches. The fresh colors of the soft parts were as follows: Bill pea-green or pale greenish blue, sometimes with a tinge of emerald-green; iris lemon-yellow; toes and basal half of claws yellowish gray, the terminal portion of the claws dusky.

The fact that in eastern North America this species is dichromatic, while in most parts of the West it presents a single phase of plumage—the gray—is one of the most interesting problems in North American ornithology. Scarcely less curious is the fact that in different portions of the Eastern Province the two phases vary in relative abundance. For example, during several years' close observation of birds in the vicinity of Mount Carmel, Illinois, I saw but a single specimen in the gray plumage, while the number of "red" specimens must have exceeded fifty. In the vicinity of Washington, D. C., the proportion of the two phases is more nearly equal, although the rufous style is perhaps the more common. In the neighborhood of Cincinnati, Ohio, about the same proportion obtains, according to Dr. F. W. Langdon, who, in the Journal of the Cincinnati Society of Natural History (Vol. V., pp. 52, 53), states that of 56 specimens actually examined, 32 were rufous and 24 were gray.

The Screech Owl (as this species is almost universally known), is, with the possible exception of the Barred Owl, much the most abundant species of the family in Illinois, and is a constant resident wherever found.

We quote the following account of its habits, by Dr. T. M. Brewer, from *History of North American Birds*, Vol. III., pp. 56, 57:

"The Mottled Owl is nocturnal in its habits, never appearing abroad in the daylight except when driven out by the attacks of hostile birds that have discovered it in its retreat. Its eyes cannot endure the light, and it experiences great inconvenience from such an exposure. During the day it hides in hollow trees, in dark recesses in the forests, or in dark corners of barns, and comes out from its retreat just before dark. During the night it utters a very peculiar wailing cry, not unlike the half-whining, half-barking complaints of a young puppy, alternating from high to low, intermingled with deep guttural trills. These cries, which are sometimes prolonged until after midnight, usually elicit an answer from its mate or companions, and would seem to be uttered as a call soliciting a reply from some lost associate. Their flight is noiseless and gliding, and they move in a manner so nearly silent as to be hardly perceptible. They are excellent mousers, and swallow their food whole, ejecting the indigestible parts, such as hair, bones, feathers, etc."

Genus **BUBO** Cuvier.

Bubo Cuv. Reg. An. 1817, 331. Type, *Strix bubo* Linn.

Gen. Char. Size varying from medium to very large; head with well-developed ear-tufts. Bill black; iris yellow, orange, or brown. Two or three outer quills with their inner webs emarginated. Third or fourth quill longest. Bill very robust, the lower mandible nearly truncated, and with a deep notch near the end; cere gradually ascending basally (not arched) or nearly straight, not equal to the culmen. Tail short, a little more than half the wing, slightly rounded. Ear-conch small, simple, without operculum; the two ears symmetrical.

There is but one species of this genus, as restricted, in North America. This, however, varies so much with locality that several geographical races have been recognized, of which the following appear pretty well characterized:

α. **virginianus.** Dark colored, usually with much ochraceous or tawny, the dark markings broad and distinctly defined. *Hab.* Eastern North America, south to Costa Rica.

β. **subarcticus.** Light colored, with buff instead of ochraceous, the dark markings narrower and less distinct. *Hab.* Western United States and interior of British America; east, occasionally, to Wisconsin and Illinois, south to central and western Mexico.

γ. **saturatus.** Very dark colored, with the dark markings much broader than in *virginianus*. *Hab.* Northwest coast, from northern California to Sitka; Labrador.

δ. **arcticus.** Very light colored, the prevailing aspect white, the dark markings very much reduced in extent. *Hab.* Interior of Arctic America.

These races are very strongly characterized in a majority of specimens from any typical locality, but there is a very great amount of individual variation in each. Only two of them (*virginianus* and *subarcticus*) are known to occur in Illinois.

Bubo virginianus (Linn.)

GREAT HORNED OWL.

Popular synonyms. Cat Owl; Booby Owl.

Strix virginiana Gmel. S. N. i, pt. i, 1788, 287.—Wils. Am. Orn. vi, 1812, 52, pl. 50, fig. 1.—Nutt. Man. i, 1832, 124.—Aud. Orn. Biog. i, 1832, 313; v, 1839, 393, pl. 61.

Strix (Bubo) virginianus Sw. & Rich. F. B.-A. ii, 1831, 82.

Bubo virginianus Bp. 1838.—Aud. Synop. 1839, 29; B. Am. i, 1840, 143, pl. 39.—Cass. in Baird's B. N. Am. 1858, 49.—Baird, Cat. N. Am. B. 1859, No. 48.—Coues, Key, 1872, 202; Check List, 1873, No. 317; 2d ed. 1882, No. 462; B. N. W. 1874, 300 (a. *virginianus;* excl. syn. pt.).—B. B. & R. Hist. N. Am. B. iii, 1874, 60, 62 (var. *virginianus*).—Ridgw. Nom. N. Am. B. 1881, No. 405.

Bubo virginianus atlanticus Cass. Illustr. 1854, 178; in Baird's B. N. Am. 1858, 49.

HAB. Eastern North America, west to edge of Great Plains, south through eastern Mexico to Costa Rica.

SP. CHAR. *Adult male* (No. 12,057, Philadelphia: C. Drexler). Bases of all the feathers yellowish rufous, this partially exposed on the head above and nape, along the scapulars on the rump, and sides of the breast. On the upper surface this is overlaid by a rather coarse transverse mottling of brownish black upon a white ground, the former rather predominating, particularly on the head and neck, where it forms broad ragged longitudinal stripes (almost obliterating the transverse bars), becoming prevalent, or blended anteriorly. The lowermost scapulars, and some of the lower feathers of the middle and secondary wing-coverts, with inconspicuous transverse spots of white. On the secondaries the mottling is finer, giving a grayish aspect, and crossed with eight sharply defined, but inconspicuous, bands of mottled dusky; primary coverts with the ground color very dark, and crossed with three or four bands of plain blackish, the last terminal though fainter than the rest; ground-color of the primaries more yellowish, the mottling more delicate; they are crossed by nine transverse series of quadrate dusky spots. The ground-color of the tail is pale ochraceous (transversely mottled with dusky), becoming white at the tip, crossed by seven bands of mottled blackish, these about equaling the light bands in width; on the middle feathers the bands are broken and confused running obliquely, or in places longitudinally. Outer webs of ear-tufts pure black, inner webs almost wholly ochraceous; eyebrows and lores white, the feathers with black shafts; face dingy rufous; eye very narrowly encircled with whitish; a crescent of black bordering the upper eyelid, and confluent with the black of the ear-tufts. Facial circle continuous black, except across the foreneck; chin, throat and jugulum pure immaculate white, to the roots of the feathers. Beneath, white prevails, but the yellowish rufous is prevalent on the sides of the breast, and shows as the base color wherever the feathers are disarranged. The sides of the breast, sides, and flanks have numerous sharply defined narrow transverse bars of brownish black; anteriorly these are finer and more ragged, coalescing so as to form conspicuous, somewhat longitudinal, black spots. On the lower tail-coverts the bars are distant, though not less sharply defined. The abdomen, medially, is scarcely maculate white. Legs and toes plain ochraceous white.

Wing formula, 2,3-4-1,5. Wing, 14.50; tail, 8.20; culmen, 1,10; tarsus, 2.00; middle toe, 2.00.

Female (No. 12,065, Maryland: R. J. Pollard): General appearance same as the male. Black blotches on head, above, and nape less conspicuous, the surface being mottled like the back, etc.; primary coverts with three well-defined narrow pure black bands; primaries with only six bands, these broader than in the male; secondaries with only five bands; tail with but six dark bands, these very much narrower than the light ones. Tibiæ and tarsi with sparse transverse bars of dusky.

Wing formula, 3,2,4-1=5. Wing, 16.00; tail, 9.00; culmen, 1.20; tarsus, 2.20; middle toe, 2.10.

Young (No. 12,062, Washington, D. C., May 20,1859: C. Drexler): Wings and tail as in adult. Downy plumage of head and body ochraceous, with detached, rather distinct, transverse bars of dusky.

Although much less numerous than the Barred Owl, this powerful and destructive species is much more plentiful than the farmer or poultry raiser desires. As Dr. Brewer truly remarks (*Hist. N. Am. B.* Vol. III., p. 68), "It is one of the most destructive of the depredators upon the poultry-yard, far surpassing in this respect any of our hawks. All its mischief is done at night, when it is almost impossible to detect and punish it. Whole plantations are often thus stripped in a single season.

"Its flight is rapid and graceful, and more like that of an eagle than one of this family. It sails easily and in large circles. It is nocturnal in its habits, and is very rarely seen abroad in the day, and then only in cloudy weather or late in the afternoon. When detected in its hiding-place by the Jay, Crow, or Kingbird, and driven forth by their annoyances, it labors under great disadvantages, and flies at random in a hesitating flight, until twilight enables it to retaliate upon its tormentors. The hooting and nocturnal cries of the Great Horned Owl are a remarkable feature in its habits. These are chiefly during its breeding season, especially the peculiar loud and vociferous cries known as its hooting. At times it will utter a single shriek, sounding like the yell of some unearthly being, while again it barks incessantly like a dog, and the resemblance is so natural as to provoke a rejoinder from its canine prototype. Occasionally it utters sounds resembling the half-choking cries of a person nearly strangled, and, attracted by the watchfire of a camp, flies over it, shrieking a cry resembling *waugh-h-o-o*. It is not surprising that with all these combinations and variations of unearthly cries, these birds should have been held in awe by the aborigines, their cries being sufficiently fearful to startle even the least timid.

"The mating of this bird appears to have little or no reference to the season. A pair has been known to select a site for their nest, and begin to construct a new one, or seize upon that of a Red-tailed Hawk, and repair it, in September or October, keeping in its vicinity through the winter, and making their presence known by their continued hooting. Mr. Jillson found a female sitting on two eggs in February, in Hudson, Mass.; and Mr. William Street, of Easthampton, in the spring of 1869, found one of their nests on the 3d of March, the eggs in which had been incubated at least a week. If one nest is broken up, the pair immediately seek another and make a renewed attempt to raise a brood. They rarely go more than a mile from their usual abode, and then only for food. Mr. Street's observations have led him to conclude that they mate about February 20, and deposit their eggs from the 25th to the 28th. They cease to hoot in the vicinity of their nest from the time of their mating until their young have left them in June. On the 19th of March, 1872, Mr. Street found two of their eggs containing young nearly ready to hatch."

Bubo virginianus subarcticus (Hoy).

WESTERN HORNED OWL.

Bubo subarcticus Hoy, Proc. Phila. Acad. vi. 1852, 211 (Wisconsin).

Bubo virginianus subarcticus Ridgw. Nom. N. Am. B. 1881, No. 405*a*.

Bubo virginianus var. *arcticus* (part) Coues, Key, 1872, 202; Check List, 1873, No. 317*a*.—B. B. & R. Hist. N. Am. B. i, 1874, 60, 64. [Not *Strix* (*Bubo*) *arcticus* Sw. & Rich.]

Bubo virginianus c. *arcticus* Coues, B. N. W. 1874, 301 (excl. syn. pt.).

Bubo virginianus var. *pacificus* (part) Cass. Illustr. 1854, 178; in Baird's B. N. Am. 1858, 49.

Bubo virginianus Auct. (all citations from western United States, and western and central Mexico).

Hab. Western United States, interior districts of British America, and table lands of Mexico. (Replaced in western Oregon and Washington Territory, and northern coast region of California, by the very dark-colored *B. virginianus saturatus* Ridgw.)

Sp. Char. Pattern of coloration precisely like that of var. *virginianus*, but the general aspect much lighter and more grayish, caused by a greater prevalence of the lighter tints, and contraction of dark pencilings. The ochraceous much lighter and less rufous. Face soiled white instead of deep dingy rufous.

Male (No. 21,581, Camp Kootenay, Washington Territory, August 2, 1860): Wing, 14.00; tail, 8.60; culmen, 1.10; tarsus, 2.00. Tail and primaries each with the dark bands, nine in number; legs and feet immaculate white. Wing formula, 3, 2=4-5-1.

Female (No. 10,5 4, Fort Tejon, California): Wing, 14.70; tail, 9.50; culmen, 1.10; tarsus, 2.10; middle toe, 2.00. Tail and primaries each with seven dark bands; legs transversely barred with dusky. Wing formula, 3, 4, 2-5-1, 6.

The above description covers the average characters of a light grayish race of the *B. virginianus*, which represents the other styles in the whole of the western and interior regions of the continent. Farther northward in the interior of the fur countries, the plumage becomes lighter still, some Arctic specimens being almost as white as the Snowy Owl.

The paler-colored race of the Great Horned Owl, like other western and northern birds, sometimes strays to Illinois during its winter migrations. There is a specimen from Pekin, Tazewell Co., in the Museum of Comparative Zoölogy at Cambridge, Mass., which the writer had the opportunity of examining in 1872. Its habits are of course essentially, if not exactly, the same as those of the typical form.

Genus **NYCTEA** Stephens.

Nyctea Stephens, Shaw's Gen. Zoöl. xiii, pt. ii, 1826, 63. Type, *Strix ermenia* Shaw,= *S. scandiaca* Linn.

Gen. Char. Size very large, the head comparatively small, and without obvious ear-tufts. Loral feathers very long, almost concealing the bill, and hair-like feathers of the toes nearly hiding the claws. Lower tail-coverts extending quite to the tip of the tail. Color of adults pure white, relieved by more or less numerous bars of slate-color.

The genus *Nyctea* is closely related to *Bubo*, and has been united with the latter as a subgenus. They seem to be sufficiently distinct, however, as the following differential characters may serve to show:

Bubo. Two to three outer quills with their inner webs emarginated. Ear-tufts well developed; loral feathers not hiding the bill, and the claws and terminal scutellæ of the toes exposed. Lower tail-coverts not reaching the end of the tail.

Nyctea. Four outer quills with their inner webs emarginated. Ear-tufts rudimentary; loral feathers hiding the bill, and claws and entire toes concealed by long hair-like feathers. Lower tail-coverts reaching to the end of the tail.

Nyctea nyctea (Linn.)

SNOWY OWL.

Popular synonyms. Great White Owl; Snow Owl; Ermine Owl.

Strix nyctea Linn. S. N. ed. 10, i, 1758, 93.—Wils. Am. Orn. iv, 1812, 53, pl. 32, fig. 1.—Sw. & Rich. F. B.-A. ii, 1831, 88.—Nutt. Man. i, 1832, 116.—Aud. Orn. Biog. iv, 1834, 135; v, 1839, pl. 121.

Surnia nyctea Selby, 1833.—Aud. Synop. 1839, 21; B. Am. i, 1840, 113, pl. 28.

Strix scandiaca Linn. S. N. ed. 12, i, 1766, 132.

Nyctea scandiaca Newt. ed. Yarrell's Hist. Brit. B. ed. 4, iii, 1872, 187.—B. B. & R. Hist. N. Am. B. iii, 1874, 61 (var. *scandiaca*).—Ridgw. Nom. N. Am. B. 1881, No. 406.—Coues, B. N. W. 1874, 309; 2d Check List, 1882, No. 479.

Strix arctica Bartr. Trav. 1791, 289 (Pennsylvania).

Nyctea scandiaca var. *arctica* B. B. & R. Hist. N. Am. B. iii, 1874, 61, 70.

Strix nivea Thunb. Sv. Sk. Handling, 1798, 84.

Nyctea nivea Gray, 1844.—Cass. in Baird's B. N. Am. 1858, 63.—Baird, Cat. N. Am. B. 1859, No. 61.—Coues, Key, 1872, 275; Check List 1874, No. 325.

Sp. Char. *Adult.* Ground-color entirely snow-white, this marked with transverse bars of clear dusky, of varying amount in different individuals.

Male (No. 12,059, Washington, D. C., December 4, 1858: C. Drexler): Across the top of the head, and interspersed over the wings and scapulars, are small transversely cordate spots of clear brownish black, these inclining to the form of regular transverse bars on the scapulars; there is but one on each feather. The secondaries have mottled bars of more dilute dusky; the primaries have spots of black at their ends; the tail has a single series of irregular dusky spots crossing it near the end. Abdomen, sides, and flanks with transverse crescentic bars of clear brownish black. Wing, 16.50; tail, 9.00; culmen, 1.00; tarsus, 1.90; middle toe, 1.30. Wing formula, 3, 2=4-5, 1.

Female (No. 12,058, Washington, D. C., December 4, 1858): Head above and nape with each feather blackish centrally, producing a conspicuously spotted appearance. Rest of the plumage with regular, sharply defined transverse bars of clear brownish black;

those of the upper surface more crescentic, those on the lower tail-coverts, narrower, and more distant. Tail crossed by five bands, composed of detached transverse spots. Only the face, foreneck, middle of the breast, and feet, are immaculate; everywhere else, excepting on the crissum, the dusky and white are in nearly equal amount. Wing, 18.00; tail, 9.80; culmen, 1.10. Wing formula, 3=4, 2-1=5.

Young (No. 36,434, Arctic America, August, 1863; MacFarlane): Only partially feathered. Wings and tail as in the adult female described, but the blackish bars rather broader. Down covering the head and body brownish or sooty slate, becoming paler on the legs.

It is only at irregular intervals, and usually during very severe winters, that this arctic species becomes common in the United States. Such a winter was that of 1876-77, when the Snowy Owl was really abundant along the Atlantic seaboard, as far south as Washington at least, and probably much farther.

Genus **SURNIA** Dumeril.

Surnia Dumeril. Zoöl. Anal. 1806, 34. Type, *Strix ulula* Linn.

Gen. Char. Size medium; form elongated, and general aspect hawk-like. No ear-tufts. Four outer quills with their inner webs sinuated, the third longest; tail nearly as long as the wing, graduated. Ear-conch small, simple, oval. Bill strong, yellow. Eyes small, the iris yellow. Tarsi and toes thickly covered with soft, dense feathers; tarsus shorter than the middle toe. Plumage much more compact and less downy, and remiges and rectrices stiffer and straighter, than in other owls.

The single species of this genus belongs exclusively to the cold-temperate and arctic zones of the Northern Hemisphere, and is circumpolar. Though somewhat hawk-like in its appearance, it is nevertheless a true Owl, and possesses no affinities of structure with the Hawks, any more than other species of *Strigidæ*.

The two races of *S. ulula* may be distinguished as follows:

Common Characters. Above dark vandyke-brown, the head above dotted with white, and the scapulars spotted with the same. Beneath transversely barred with vandyke-brown and white, the bars regular, continuous, and sharply defined. Head and neck with two lateral,, and one posterior median, stripes of brownish black, the space between them with white prevailing. Bill and iris yellow. Wing about 9.00; tail, 6.80-7.00.

α. ulula. White spotting prevailing. *Hab.* Palæarctic Region; occasional in western Alaska.

β. caparoch. Brown spotting prevailing. *Hab.* Nearctic Region.

Surnia ulula caparoch (Müll.)

AMERICAN HAWK OWL.

Popular synonyms. Hudsonian Hawk Owl, or Day Owl.

Strix funerea LINN. S. N. ed. 12, i, 1766, 133 (part, but not of 1758).—SW. & RICH. F. B.-A. ii, 1831, 92.—NUTT. Man. i, 1832, 115.—AUD. Orn. Biog. iv, 1834, 350, pl. 378.

Surnia funerea BP. 1838.—AUD. Synop. 1839, 21; B. Am. i, 1840, 112, pl. 27.—RIDGW. Nom. N. Am. B. 1881, No. 407.—COUES, 2d Check List, 1882, No. 480.

Strix caparoch P. ST. MULLER, Suppl. S. N. 1779, 69.

Surnia ulula caparoch STEJNEGER, The Auk, 1884, 363.

Strix hudsonia GMEL. S. N. i, pt. i, 1788, 295.—WILS. Am. Orn. vi, 1812, 64, pl. 50, fig. 6.

Surnia ulula var. *hudsonia* COUES, Key, 1872, 305; Check List, 1874, No. 326; B. N. W. 1874, 311.—B. B. & R. Hist. N. Am. B. iii, 1874, 75.

Surnia ulula (LINN.) CASS in Baird's B. N. Am. 1858, 64.—BAIRD, Cat. N. Am. B. 1859, No. 62.

HAB. Northern North America, south in winter to northern border of United States (Dakota, Montana, Minnesota, northern Illinois, Massachusetts, etc).

SP. CHAR. *Adult.* Above rich dark vandyke-brown, darker anteriorly, less intense and more grayish on tail. A narrow streak of brownish black originating over the middle of eye, and extending backward above the upper edge of the ear-coverts, where it forms an elbow passing downward in a broad stripe over the ends of the ear-coverts; confluent with this, at about the middle of the vertical stripe, is another of similar tint, which passes more broadly down the side of the nape; between the last stripes (those of opposite sides) is another or median one of less pure black, extending from the occiput down the nape. Every feather of the forehead, crown, and occiput with a central ovate dot of white: those anterior more circular, on the occiput less numerous and more linear. Between the lateral and posterior nuchal stripes the white prevails, the brown forming irregular terminal and transverse or median spots; these grow more linear toward the back. Interscapulars plain; posterior scapulars variegated with partially concealed large transverse spots of white, the lower feathers with nearly the whole outer webs white, their confluence causing a conspicuous elongated patch above the wing. Rump with sparse, irregular, but generally transverse, spots of white; upper tail-coverts with broader, more irregular bars of the same, these about equal to the brown in width. Lower feathers of the middle and secondary wing-coverts each with an ovoid spot of white on the outer web; secondaries crossed by about three transverse series of longitudinally ovoid white spots (situated on the edge of the feather), and very narrowly tipped with the same; primary coverts with one or two less continuous transverse series of spots, these found only on the outer feathers; primaries with about seven transverse series of white spots, these indistinct except on the five outer feathers, on which those anterior to the emargination are most conspicuous; all the primaries are very narrowly margined with white at the ends. Tail with seven or eight very narrow bands of white, those on the middle feathers purely so, becoming obsolete exteriorly; the last is terminal. Eyebrows, lores, and face grayish white, the grayish appearance caused by the blackish shafts of the feathers; that of the face continues (contracting considerably) across the lower part of the throat, separating a large space of dark brown, which covers nearly the whole throat, from an indistinct collar of the same extending across the jugulum—this collar uniting the lower ends of the auricular and cervical dusky bands, the space between which is nearly clear white. Ground-color of the lower parts white, but everywhere with numerous very regular transverse bars of deep brown, of a tint more reddish than the back, the brown bars rather more than half as wide as the white ones; across the upper part of the breast (beneath the dark gular collar) the white invades very much and reduces the brown, forming a broad lighter belt across the jugulum; below this the brown bars increase in width, their aggregation tending somewhat to a suffusion, giving the white jugular belt better definition. On the legs and toes the bars are narrower, more distant, and less regular.

The whole lining of the wing is barred like the sides. The dark brown prevails on the under surface of the primaries, etc.; the former having transverse, irregular, elliptical spots of white, these touching neither the shaft nor the edge; on the longest quill are seven of these spots; on all they are anterior to the emargination.

Male (No. 49 908, Nulato, Alaska, April 21, 1867; W. H. Dall): Wing formula, 3, 4-2, 5-6-1. Wing, 9.00; tail, 7.00; culmen, .70; tarsus, (of another specimen; wanting in the present), .90; middle toe, .82.

Female (No. 49,807, Nulato, April 20; W. H. Dall): Wing formula, 3, 4-2-5-6-7-1. Wing, 9.00; tail, 6.80; culmen, .70; middle toe, .80.

There is only one valid record known to me of the occurrence of this northern species in Illinois, viz., that by Mr. Nelson in his list of the birds of the northeastern portion of the State (*Bull. Essex Inst.* Vol. VIII., 1876, p. 117), where its capture in Kane county, by Dr. J. W. Velie, the first of September, 1869, is noted.

Suborder **FALCONES.**—Diurnal Raptores.

Family **FALCONIDÆ.**—Falcons, Kites, Harriers, Hawks, and Eagles.

Char. Eyes directed laterally, and eyelids provided with lashes. Toes invariably naked, and tarsus usually naked and scutellate (feathered only in *Aquila* and *Archibuteo*). Outer toe not reversible (except in *Pandion*). Head never with ear-tufts, and never wholly naked (except in the *Vulturinæ*, of the Old World).

The above characters are about the only readily observable points in the external anatomy in which the *Falcones* differ strikingly from the *Striges* and *Sarcorhamphi*, and may serve to distinguish the birds of this family from those of the two others. The osteological characters, however, are more decided and important from a taxonomic point of view, and serve to separate the Diurnal Raptores as a well-defined suborder.

The number of subfamilies into which the family is divisible is an open question. In North America, however, the following may be distinguished:

A. Nasal bones almost completely ossified, the nostril being a small orifice, with a conspicuous central bony tubercle; its form nearly or quite circular, or (in *Polyborus*) linear and oblique, with its upper end the posterior one. Scapular process of the coracoid produced forward so as to meet the clavicle. Inferior surface of the supramaxillary bone with a prominent median angular ridge. Superciliary process of the lachrymal consisting of a single piece. *Falconinæ*.

B. Nasal bones very incompletely ossified, the nostril being a large, more or less oval, opening, of oblique direction, its lower end being invariably the posterior one; without bony tubercle, and never perfectly circular. Scapular process of the coracoid not produced forward so as to meet the clavicle. Nasal bones incompletely ossified, the nostrils being very large, and without bony rim or tubercle. Inferior surface of the supramaxillary bone without a median ridge. Superciliary process of the lachrymal variable.

a. Outer toe not reversible. Claws of unequal length, and not contracted in width on under surface. Plumage with aftershafts..... *Accipitrinæ*.

b. Outer toe reversible. Claws all of equal length, and narrowed and rounded on their under surface. Plumage without aftershafts..... *Pandioninæ*.

I am not fully satisfied of the advisability of according *Pandion* the rank of a family but am rather inclined to look upon it as constituting a subfamily of a family *Buteonidæ*. The reversible toe and the peculiarly compact plumage, which are apparently its most marked characters, are certainly teleological modifications, fitting it perfectly for its piscatorial habits. In other characters, both anatomical and external, it exhibits numerous points of analogy, if not relationship, to the genera *Elanoides* and *Elanus*, and it seems to me should be placed at least as near to these forms as they are to any of the Buteonine genera.

Subfamily **FALCONINÆ.**

Char. (See page 426.)

The Falconinæ, as here recognized, include not only the true Falcons (*Falconeæ*), but also three other groups, each of which is peculiar to Middle and South America. They may be distinguished as follows:

A. Posterior toe abbreviated, very much shorter than the lateral pair; tarsi and toes covered with small hexagonal scales, larger in front.
- *a.* Nostrils a small, round, or oblique opening, with a bony-rimmed margin and central tubercle.
  - 1. Superior tomium with a conspicuous tooth, and inferior tomium with a corresponding notch. Superciliary process of the lachrymal elongated, narrow, reaching nearly across the orbit. Posterior margin of the sternum nearly even, with a pair of large oval foramina. One or two outer primaries with inner webs emarginated near their tips. . . . *Falconeæ.*
  - 2. Tomia without tooth or notch. Superciliary process of the lachrymal abbreviated, reaching only half-way across the orbit. Posterior margin of the sternum with a pair of deep indentations. Three or more outer primaries sinuated near the middle portion . . . . . *Polyboreæ.*
- *b.* Nostrils a large opening without bony-rimmed margin or central tubercle.
  - 3. Superciliary process of the lachrymal elongated, broad, extending nearly across the orbit. Tomia without tooth or notch. Posterior margin of the sternum as in *Falconeæ*. Four or more outer primaries with inner webs sinuated near the middle portion . . . . . *Micrastureæ.*

B. Posterior toe elongated, almost equal to the lateral pair. Tarsi and toes covered uniformly with thick, rough, imbricated scales.
- 4. Tomia without tooth or notch. Nostrils as in *Falconeæ* and *Polyboreæ*. Superciliary process of the lachrymal elongated, very broad, reaching nearly across the orbit. Posterior margin of the sternum nearly even, entire, and without foramina. Primaries as in *Polyboreæ* and *Micrastureæ* . . . . . *Herpetothereæ.*

Of the foregoing groups only two have representatives in North America; the *Falconeæ*, with several members, and the *Polyboreæ* with a single tropical species coming just within our border.

The *Falconeæ* are represented in North America by apparently a single genus, *Falco*, although it may ultimately prove necessary to raise one or more of the supposed subgeneric divisions to full generic rank.

Genus **FALCO** Linnæus.

Char. Bill strong, its breadth at the base equal to or exceeding its length; upper outline of the cere on a level with, or rather lower than, the base of the culmen; gonys very convex, the chord of the curve about half that of the culmen. Maxillary tomium with a very prominent "tooth," and mandibular tomium with a corresponding deep notch; the end of the mandible being truncated and the tip of the maxilla compressed and produced into a strongly hooked tip. Nostrils small, circular, and with a conspicuous central bony tubercle. Orbital region bare; projecting superciliary shield bare and conspicuous, though not very prominent. Tail shorter than the wing, more or less rounded, the feathers rather hard. Primaries very strong, elongated, never more than two having their inner webs emarginated, the emargination angular and near the end of the quill. Tarsus never with a single continuous row of transverse scutellæ, either in front or behind. Middle toe very long—never much shorter, and sometimes longer than the tarsus.

The above diagnosis includes the essential characters of all the true Falcons, which apparently constitute a single genus, with, however, a number of more or less strongly marked subgeneric divisions. What are probably distinct genera of *Falconinæ* are *Spizapteryx*, Kaup (South America), and *Ierax* Vigors (Indian). The latter includes the smallest of the Accipitres, some species being no larger than the European House Sparrow (*Passer domesticus*).

The following groups of North American Falcons are pretty well characterized, and some of them (especially *Tinnunculus*) may be entitled to generic rank:

A. Only the first primary with inner web emarginated. First or second quill longest, the first longer than the fourth. Sexes essentially alike in coloration, but young very different from adults.

1. **Hierofalco.** Tarsus longer than middle toe, and feathered far below the knee. First quill shorter than the third. Size large to largest of the family.
2. **Rhynchodon.** Tarsus shorter than middle toe and scarcely feathered below the knee. First quill equal to, or longer than, the third. Size large to medium.

B. Two outer primaries with inner webs emarginated. Second or third quill longest, the first shorter than the fourth.

a. Basal joint of toes without transverse scutellæ. Tarsus about equal to the middle toe.

3. **Æsalon.** Size small (wing never more than 9 inches). Sexes very different in adult plumage, the young of both sexes resembling the adult female.

b. Basal joint of toes covered with transverse scutellæ. Tarsus longer than middle toe.

4. **Tinnunculus.** Size small (wing never more than 8 inches in the American species). Sexes very different at all ages, but not differing according to age.* Large transverse scutellæ of feet interrupted at lower extremity of tarsus and extreme base of toes. Tarsus much longer than middle toe. Bill small, the cere on the top less than one fourth the culmen.

5. **Rhynchofalco.** Size medium (wing more than 9 inches). Sexes alike in color, and young not essentially different from adults. Large scutellæ of feet uninterrupted at base of toes. Tarsus but little longer than middle toe. Bill very robust, the cere on top about one third the culmen. (Tropical, north to Texas.)

SUBGENUS **Hierofalco** CUVIER.

Hierofalco CUV. Reg. An. 1817, 312. Type, *Falco candicans* GMEL.,=*F. islandus* BRUNN.
Gennaia KAUP, Isis, 1847, 69. Type, *Falco jugger* GRAY.

Synopsis of North American Species.

1. **F. gyrfalco.** Feathering of the tarsus extending around on to the posterior face, where the narrow naked strip is nearly or quite concealed. *Male.* Wing, 13.00–15.80; tail, 7.50–10.00. *Female.* Wing, 15.75–17.00; tail, 9.50–11.50. Colors extremely variable, the extremes being bluish or brownish gray barred or striped with dusky on the upper parts, and uniform dark sooty slate, with few or no light markings.
2. **F. mexicanus.** Feathering of the tarsus confined almost wholly to the anterior face, the posterior face entirely naked. *Male.* Wing, 11.80–12.50; tail, 6.40–8.00. *Female.* Wing, 13.25–14.30; tail, 8.00–9.00. *Adult male.* Above light brown, barred anteriorly with pale fulvous and posteriorly with pale bluish gray; top of head grayish brown, streaked with dusky. *Adult female.* Above brown, without distinct bars, but feathers bordered with paler rusty brown. *Young.* Above brown, feathers distinctly margined with light rusty; beneath creamy white, the axillars and broken flank-patch dusky brown; chest, etc., streaked with dark brown.

Falco mexicanus Schleg.

PRAIRIE FALCON.

Popular synonym. American Lanner Falcon.

Falco mexicanus "LICHT." SCHLEG. Abh. Geb. Zoöl. 1841, 15.—COUES, Key, 1872, 213; Check List, 1874, No. 342; 2d ed. 1882, No. 502.
Falco polyagrus (part) CASS. Proc. Phil. Acad. vi. 1854, 450; Illustr. B. Cal. etc. 1853, 88, pl. 16 (light fig.); in Baird's B. N. Am. 1858. 12.—BAIRD, Cat. N. Am. B. 1859, No. 10.
Falco lanarius var. *polyagrus* B. B. & R. Hist. N. Am. B. iii, 1874. 123.
Hierofalco mexicanus polyagrus RIDGW. Nom. N. Am. B. 1881, No. 412.

HAB. Western United States and table-lands of Mexico; north to Washington Territory and Dakota, east to Illinois (prairie districts), Indian Territory, etc.

* In the European Kestril (*F. tinnunculus* Linn.) and its Old World allies, the young male is said to resemble the adult female in coloration.

SP. CHAR. *Adult male* (No. 59,063, U. S. Nat. Mus., Wahsatch Mts., Utah, May 23, 1868: L. E. Ricksecker). Above cinereous-drab, becoming gradually paler and more bluish posteriorly, barred, indistinctly, everywhere with a more dusky tint, the shafts of all the feathers blackish; anteriorly the darker shade predominates, while posteriorly the bluish prevails; on the anterior portions the light bars are much restricted in width, and of a more ochraceous tint. Tail plain, very pale, ashy drab, narrowly tipped with reddish white, this changing to pale rusty on the middle pair; the concealed portion of the feathers outside the shaft show obsolete or faint traces of darker bars, which on the middle pair are apparently about eleven in number. On the inner webs the paler bars become broader than the darker ones, and incline to ochraceous in tint, the lateral feather being edged externally with this color. Primaries plain ashy drab, with a hoary tinge, growing insensibly darker terminally, and with a slightly paler apical margin. Head and neck above, dark umber-brown, with conspicuous shaft-streaks of black. Lores and broad superciliary stripe (somewhat interrupted above the eyes) white, finely and sparsely streaked, the two stripes confluent across the occiput; a broad heavy "mustache" from the lores and rictus downward and obliquely backwards, across the maxilla, and a wider posterior stripe, like the crown. Beneath continuous white, with a faint ochraceous tinge on the abdomen and crissum; abdomen and sides of the breast with a few scattered, small, ovate spots of vandyke-brown; sides transversely spotted with vandyke-brown, the spots coalesced into a broken patch on the flanks; outside of the tibiæ with transverse spots of the same. Axillars plain clear vandyke-brown, with a few nearly obsolete rusty specks near their ends; lining of the wing clear white, the feathers with central spaces of dusky brown, which toward the edge become aggregated into a longitudinal patch; inner webs of the primaries with broad transverse spots of white, which reach nearly to the shaft; they are about thirteen in number on the longest quill. Feet yellow; base of the bill tinged with the same. Wing, 12.00; tail, 7.50; tarsus, 1.90; middle toe, 1.70.

Adult (?) *female* (No. 18,258, Fort Buchannan, New Mexico: Dr. Irwin): Above continuous umber-drab, growing gradually lighter posteriorly, the tail being pale drab; no transverse bars (except a few concealed ones on back and secondaries), but all the feathers faintly bordered with paler rusty brown, these edgings on upper tail-coverts almost white. Tail tipped with creamy white, and with many transverse spots or broad bars of the same on inner webs, outer feather irregularly skirted with the same, and all decidedly paler than the ground color along their edges. Head as in the male, but forehead white, and superciliary stripe more continuous. Breast and abdomen with longitudinal lanceolate or cuneate streaks of dark vandyke-brown; patch of same on flanks, more continuous than in the male; axillars unvariegated clear dark vandyke brown, longest primary with eleven transverse spots of white; posterior outer face of tibiæ with sagittate spots of dark brown. Wing, 14.25; tail, 8.00; tarsus, 2.10; middle toe, 2.00.

Young male (No. 32,207, South Fork of Platte, July 19, 1858: C. S. McCarthy): Above darker umber than the last, each feather distinctly bordered terminally with rusty ochraceous. Beneath with a deeper cream-colored tinge, streaks blacker; flank-patch more conspicuous and uniform; axillars unvariegated dusky. Wing, 13.25; tail, 7.25.

Adult males. A specimen from Gilmer, Wyoming Territory, (No. 60,176, U. S. Nat. Mus.: H. R. Durkee), is very similar to the Wahsatch example described above, but being in more worn plumage the markings are not so well defined. The bars are entirely obsolete on the rump, where, however, the bluish ashy is relieved by very sharp black shaft-streaks; on the exposed surface of the closed tail, the tint is very pale brownish ash, and the bars are almost completely obliterated. The tints generally partake of a dull ashy character, with little brown. It measures, wing,

11.80; tail, 7.50; culmen, .75; tarsus, 2.15; middle toe, 1.65. Cere, base of both mandibles, eyebrow, bare orbital region, tarsi and toes, clear yellow.

Adult (?) *females.* A female obtained by Captain Bendire at Camp Harney, Oregon, measured, when fresh, 18.50 inches in length; wing, 13.25; tail, 8.00; weight 4 lbs. 12 oz. "Base of bill and cere sky-blue; tarsi and toes light greenish yellow."

Young males. A young male obtained by me November 29, 1867, at Carson City, Nevada, measured as follows before being skinned: Total length, 17 inches; extent, 37.75; wing, 12.25; tail, 7.50; weight only 1½ lbs. Bill, very fine bluish white, shading terminally into bluish slate, the point black; cere, rictus, and bare orbital region, greenish white; iris, vivid vandyke-brown; tarsi and toes pale yellowish, with a tinge of verdigris-green.

This fine falcon is a mere straggler to Illinois, having been observed on but few occasions. A specimen was obtained at Rock Island, by Mr. I. D. Sargent, of Philadelphia, and by him presented to the Academy of Natural Sciences in that city, while it has been observed on two occasions by the writer, once near Mount Carmel and once in Lawrence county (near the town of Bridgeport), both during the month of September, 1871.

Subgenus **Rhynchodon** Nitzsch.

Rhynchodon Nitzsch, Pterylog. 1840, 7, 8. Type, *Falco peregrinus* Lath.

The essential characters of this subgenus having been given on page 428, there is no necessity for their repetition here. There is but one species in North America, the circumpolar *F. peregrinus*, or Peregrine Falcon.

Falco peregrinus anatum (Bonap.)

DUCK HAWK.

Popular synonyms. American Peregrine; Great-footed Falcon; Black-capped Falcon.

Falco peregrinus Wils. Am. Orn. ix, 1814, 120, pl. 76.—Nutt. Man. i, 1832, 53.—Aud. Orn. Biog. i, 1832, 85; v, 1839, 365, pl. 16; Synop. 1839, 16; B. Am. i, 1840, 84, pl. 20.

Falco nævius Gmel. S. N. i, pt. i; 1788, 271.

Falco peregrinus nævius Ridgw. Nom. N. Am. B. 1881, No. 414.

Falco anatum Bonap. Comp. List, 1838, 4.—Cass. in Baird's B. N. Am. 1858, 7.—Baird, Cat. N. Am. B. 1859, No. 5.

Falco communis var. *anatum* Ridgw. in B. B. & R. Hist. N. Am. B. iii, 1874, 128, 132.

Falco communis c. *anatum* Coues, B. N. W. 1874, 341.

Falco nigriceps CASS, Proc. Phil. Acad. vi, 1853; 450; Illust. B. Cat. etc. 1854, 87; in Baird's B. N. Am. 1858 8; ed. 1860, pl. 11.—BAIRD. Cat. N. Am. B. 1859, No. 6.
Falco communis "GMEL." COUES, Key, 1872, 213; Check List, 1874, No. 343.

HAB. Whole of America.

SP. CHAR. *Adult male* (No. 43,134, U. S. Nat. Mus., Fort Resolution, Brit. N. Am., June: J. Lockhart). Upper parts dark bluish plumbeous, approaching black anteriorly, but on rump and upper tail-coverts becoming bluish plumbeous ash. On the head and neck the continuous plumbeous black covers all the former except the chin and throat, and the back portion of the latter; an invasion or indentation of the white of lower parts up behind the ear-coverts separates the black of the cheeks from that of the neck, throwing the former into a prominent angular patch; forehead and lores grayish. All the feathers above (posterior to the nape) with transverse bars of plumbeous black, these most sharply defined posteriorly, where the plumbeous is lightest. Tail black, more plumbeous basally, very faintly paler at the tip, and showing ten or eleven transverse narrow bands of plumbeous, these most distinct anteriorly; the bars are clearest on inner webs. Alula, primary and secondary coverts, secondaries and primaries, uniform plumbeous black, narrowly whitish on terminal margin, most observable on secondaries and inner primaries. Lower parts white, tinged with delicate cream-color, this deepest on the abdomen; sides and tibiæ tinged with bluish. Chin, throat and jugulum immaculate; the breast, however, with faint longitudinal shaft-streaks of black; sides, flanks and tibiæ distinctly barred transversely with black, about four bars being on each feather; on the lower tail-coverts they are narrower and more distant; on the abdomen the markings are in the form of circular spots; anal region barred transversely. Lining of the wing (including all the under coverts) white tinged with blue, and barred like the sides; under surface of primaries slaty, with elliptical spots or bars of creamy white on inner webs, twelve on the longest. Wing formula, 2-1-3. Wing, 12.25; tail, 6.00; tarsus, 1.60; middle toe, 1.85; outer, 1.40; inner, 1.20; posterior, .80; culmen, .80.

Adult female (No. 13,077, Liberty Co., Georgia: Professor J. L. Leconte): Like the male, but ochraceous tinge beneath deeper; no ashy wash; bands on the tail more sharply defined, about ten dark ones being indicated; outer surface of primaries and secondaries with bands apparent; tail distinctly tipped with ochraceous white. Inner web of longest primary with thirteen more reddish transverse spots. White of neck extending obliquely upward and forward toward the eye, giving the black cheek patch more prominence. Markings beneath as in the male. Wing formula the same. Wing, 14.50; tail, 7.00; tarsus, 1.95; middle toe, 2.10; culmen, .95.

Young male (No. 53,193, Truckee River, Nevada, July 24, 1867; R. Ridgway): Above plumbeous black, tail more slaty. Every feather broadly bordered terminally with dull cinnamon; these crescentic bars becoming gradually broader posteriorly, narrower and more obsolete on the head above. Tail distinctly tipped with pale cinnamon, the inner webs of feathers with indistinct transverse spots on the same, these touching neither the edge nor the shaft; scarcely apparent indications of corresponding spots on outer webs. Region round the eye, and broad "moustache" across the cheeks, pure black, the latter more conspicuous than in the older stages, being cut off posteriorly by the extension of the cream-color of the neck nearly to the eye. A broad stripe of pale ochraceous running from above the ear-coverts back to the occiput, where the two stripes of opposite sides nearly meet. Lower parts purplish cream-color, or rosy ochraceous white, deepest posteriorly; jugulum, breast, sides, flanks, and tibiæ with longitudinal stripes of plumbeous black, these broadest on flanks and abdomen, and somewhat sagittate on the tibiæ; lower tail-coverts with distant transverse bars. Lining of the wing like the sides, but the markings more transverse; inner web of longest primary with nine transverse purplish ochre spots. Wing formula, 2-1-3. Wing, 12.50; tail, 7.00. Length, 16.50; expanse, 39.25. Weight, 1½ lbs. Basal half of the bill pale bluish white, cere rather darker; terminal half (rather abruptly) slate-color, the tip deepening into black; iris very dark vivid vandyke-brown; naked orbital space pale bluish white, with a slight greenish tint; tarsi and toes lemon-yellow, with a slight greenish cast; claws jet-black.

It is extremely uncertain how many of the so-called "species" of Peregrine Falcon which pass current should be referred to *F. peregrinus* as geographical races, and it is equally doubtful how many of the latter should be recognized. I have yet to see a North American Peregrine which I could not distinguish readily from European examples, the chest being usually either immaculate or else very inconspicuously streaked in the American bird; but European writers say that they have inspected American specimens which had the breast as distinctly streaked as those from Europe. It is possible, however, that their remarks are based upon specimens of *F. pealei*, which has the chest so heavily marked as to be sometimes even spotted, and which differs so much from typical *peregrinus* that it may eventually prove to be a distinct species, though I am inclined to regard it as one of several geographical races of a widely distributed parent stock, to which I would also refer *F. cassini* Sharpe, of the southern extremity of South America.

In the adult plumage the principal variation is in the extent and disposition of the bars beneath. In most individuals they are regularly transverse only laterally and posteriorly, those on the belly being somewhat broken into more irregular cordate spots, though always transverse; in no American specimen that I have seen, are they as continuously transverse as in a male (No. 18,804) from Europe, which, however, in this respect, may form an exception to most European examples.

Very old males (as 49,790, Fort Yukon; 27,188, Moose Factory, (type of Elliott's figure of *F. peregrinus*, in Birds of America); and 42,997, Spanishtown, Jamaica) lack almost entirely the reddish tinge beneath, and have the posterior portions strongly tinged with blue.

The fact that this noble bird breeds in hollow trees in various parts of the Mississippi Valley is a comparatively recent discovery, being first announced by Col. N. S. Goss in the "Nuttall Bulletin" for January, 1878.

In the spring of 1878, the writer found several pairs nesting in sycamore trees in the neighborhood of Mt. Carmel. Three nests were found in the immediate vicinity of the town. All were placed in cavities in the top of very large sycamore trees, and were inaccessible. One of these trees was felled, however, and measurements with a tape-line showed the nest to have been eighty-

nine feet from the ground, its location being a shallow cavity, caused by the breaking off of the main limb, the upper part of which projected over sufficiently to form a protection from the sun and rain.

Subgenus Æsalon Kaup.

Æsalon Kaup, Sk. Ent. Eur. Thierw. 1829, 40. Type *Falco æsalon* Gmel.

The species of this subgenus may be distinguished by the following characters:

Common Characters. *Adult males* plumbeous blue above, the feathers with dusky shafts; tail more or less banded with black, and tipped with whitish. Beneath whitish, buffy, or light rusty, striped with brownish. *Adult females.* Above brownish, with darker shaft-streaks. Tail usually with five to eight, more or less distinct, lighter bands (all but the terminal one sometimes obsolete in *F. suckleyi*). Beneath whitish, buffy, or ochraceous, striped with dusky or brownish. *Young (both sexes).* Similar to the adult female, but colors softer, more blended.

A. Tail of adult male with six imperfect blackish bands, besides the subterminal broad black zone. Adult female and young with about eight light bands, including the terminal one.

(*F. regulus*, of Europe and Northern Asia.)

B. Tail of adult male with only three or four blackish bands, besides the broader subterminal one. Adult female and young never with more than six light bands, including the terminal one.

1. **F. richardsoni.** *Adult male.* Above pearl-blue or pale ashy blue, the crown more or less tinged with ochraceous. Tail crossed by five dark and six light bands, the latter more or less mixed or clouded with white; outer webs of primaries distinctly spotted with light bluish gray, the inner web of the longest with eight white spots. "Mustache" obsolete, or but very slightly indicated. Lower parts buff, or buffy white, the tibiæ and a nuchal collar more ochraceous. Breast, etc., rather broadly striped with brownish. Wing, 7.70–8.60; tail, 5.00–6.00; culmen, .50–.60; tarsus, 1.42–1.55; middle toe, 1.20–1.30. *Adult female.* Above earthy brown, more or less distinctly marked with transverse spots of a lighter shade. Tail with six very distinct and perfectly continuous whitish bands; secondaries distinctly banded with ochraceous, and outer webs of primaries distinctly spotted with a lighter tint of the same. Beneath white or buffy, the breast, etc., broadly striped with light brown. Wing, 8.50–9.00; tail, 6.00–6.30; culmen, .55–.58; tarsus, 1.55–1.65; middle toe, 1.35–1.40; *Young.* Similar to the adult female, but more decidedly buffy below, the upper parts more or less tinged with rusty.

2. **F. columbarius.** *Adult male.* Above much darker plumbeous. Tail crossed by not more than four dark or five light bands (including terminal one). *Adult female* and *young.* Very variable in color, but tail never with more than four dark or five light bands, including the whitish tip.

   α. *columbarius.* *Adult female* and *young* with distinct light spots on inner webs of primaries, and the light bands on the tail more or less distinct. *Male:* Wing, 7.20–7.90; tail, 4.90–5.50; culmen, .48–.50; tarsus, 1.30–1.40; middle toe, 1.15. *Female:* Wing, 8.00–8.55; tail, 5.50–6.00; culmen, .55–.60; tarsus, 1.55–1.60; middle toe, 1.35–1.40.

   β. *suckleyi.* *Adult female* and *young*, without distinct spots on inner webs of primaries, or light bands on tail (except the whitish tip), these markings being sometimes wholly obsolete. General color much darker, the lower parts even with dusky predominating. *Male:* Wing, 7.35–7.70; tail, 5 25-5.60; culmen, .48–.50; tarsus, 1.30–1.45; middle toe, 1.20. *Female:* Wing, 8.25–8.50; tail, 5.70–5.80; culmen, .55–.60; tarsus, 1.50–1.60; middle toe, 1.35–1.40. (*Adult male unknown!*)

Falco columbarius (Linn.)

PIGEON HAWK.

Popular synonyms. American Merlin; Little Corporal (Audubon).

Falco columbarius Linn. S. N. ed. 10, i, 1758, 90; ed. 12, i, 1766, 128.—Wils. Am. Orn. ii, 1810, 107, pl. 15, fig. 3.—Aud. Orn. Biog. i, 1831, 466; B. Am. i, 1839, 88, pl. 21; Synop. 1839, 16.—Nutt. Man. i, 1832, 60.—Cass. in Baird's B. N. Am. 1858, 9, (s. g. *Hypotriorchis*).—Coues, Key, 1872, 214; Check List, 1874, No. 344; 2d ed. 1882, No. 505; B. N. W. 1874, 345.

Hypotriorchis columbarius Gray, 1844.—Baird, Cat. N. Am. B. 1859, No. 7.

Æsalon columbarius Kaup, Contr. Orn. 1850, 54.—Ridgw. Nom. N. Am. B. 1881, No. 417.

Falco (Æsalon) lithofalco var. *columbarius* B. B. & R. Hist. N. Am. B. iii, 1874, 143, 144.

Falco temerarius Aud. Orn. Biog. i, 1831, 381; B. Am. pls. 75, 92.

Hab. Whole of North America, migrating in winter over whole of Middle America and northern South America (as far as Ecuador and Venezuela), and throughout West Indies.

Sp. Char. *Adult male.* Above cinereous, varying in shade, but generally of a slaty bluish cast; each feather with a distinct shaft-streak of black, these lines most conspicuous on the head above. Tail with a very broad subterminal band of black, about one inch in width; there are indications of three other bands, their continuity and distinctness varying with the individual, but generally quite conspicuous, and each about half the width of the subterminal one; the latter is succeeded by a terminal one of white, about three sixteenths of an inch in width, sometimes broader; on the lateral feathers the black bands are always conspicuous, being in the form of transverse oblong spots, crossing the shaft, but less extended on the outer web, which is often immaculate except at the end, the broad terminal band always extending to the edge of the feather. Primaries dusky black, margined terminally more or less distinctly with whitish (sometimes fading on the edge only); on the inner web is a series of about eight transverse oval spots of white, and generally corresponding to these are indications of bluish ashy spots on the outer web. Beneath white, this purest on the throat, which is immaculate; there is generally a more or less strong tinge of fulvous beneath, this always prevalent on the tibiæ, and on a distinct collar extending round the nape, interrupting the blue above; the tibiæ frequently incline to ochraceous rufous. Lateral portions of the head with fine streaks of dusky, these thickest on the upper edge of the ear-coverts, leaving a distinct whitish superciliary streak, those of opposite sides meeting on the forehead. Breast, upper part of the abdomen, sides, and flanks, with longitudinal stripes of umber, each with a shaft-streak of black; on the flanks their shape is modified, here taking the form of spots running in chain-like series; tibiæ with narrower and darker streaks; lower tail-coverts with narrow central streaks like those on the tibiæ. Frequently there is a strong bluish shade on flanks and lower tail-coverts, sometimes replacing the brown of the spots on the former, and clouding in a similar form the latter. Length about, 11.00; extent, 23.75; wing, 7.20–7.90; tail, 4.90–5.50; culmen, .48–.50; tarsus, 1.30–1.40; middle toe, 1.15–1.25.

Adult female. Pattern of coloration as in the male, but the colors different. The blue above replaced by dark umber-brown with a plumbeous cast, and showing more or less distinct darker shaft-lines; those on the head above very broad, giving a streaked appearance; white spots on inner webs of primaries more ochraceous than in the male. Tail dark plumbeous brown, shading into blackish toward end, with five rather narrow ochraceous or soiled white bars, the first of which is concealed by the upper coverts, the last terminal. White beneath less tinged with reddish than in the male, the tibiæ not different from the other portions; markings beneath as in the male. Total length, about 12.50–13.25; extent, 20.50–22.00; wing, 8.00–8.55; tail, 5.50–6.00; culmen, .55–.60; tarsus, 1.55–1.60; middle toe, 1.35.

Young. Above plumbeous brown, tinged with fulvous on head, and more or less washed with the same on the rump; frequently the feathers of the back, rump, scapu-

lars, and wings pass into a rusty tinge at the edge; this color is, however, always prevalent on the head, which is conspicuously streaked with dusky. Tail plumbeous dusky, darker terminally, with five regular light bars; those towards the base ashy, as they approach the end becoming more ochraceous; these bars are more continuous and regular than in the adult female, and are seen conspicuously on the middle feathers. Primaries dusky, passing on edge (terminally) into lighter; spots on the inner webs broader than in the female, and pinkish ochre; outer webs with less conspicuous corresponding spots of the same. Beneath soft ochraceous, marked as in adult female, but stripes less sharply defined; tibiæ not darker than abdomen.

This little Falcon, like the Peregrine, is resident, locally, throughout the State, but is comparatively rare. Like its larger relative, it nests in cavities of large trees in the forest, but where suitable cliffs occur it also builds its nest among rocks.

"This Hawk," says Dr. Brewer,* "is remarkable for its rapid flight and its courage and enterprise in attacking birds as large or even larger than itself, though generally it only preys upon smaller birds, such as Grakles, Red-winged Blackbirds, Robins, and Pigeons."

Subgenus **Tinnunculus** Vieillot.

Tinnunculus Vieill. Ois. Am. Sept. I, 1807, 39. Type *Falco tinnunculus* Linn.
Pœcilornis Kaup, Nat. Syst. 1828, 108. Type *Falco sparverius* Linn.

Falco sparverius (Linn.)

AMERICAN SPARROW HAWK.

Popular synonyms. American Kestril; Little Rusty-crowned Falcon.

Falco sparverius Linn. S. N. ed. 10, i, 1758, 90; ed. 12, i, 1766, 128.—Wils. Am. Orn. ii, 1810, 117, pl. 16. fig. 1 (male), pl. 23, fig. 2 (female).—Sw. & Rich. F. B.-A. ii, 1831, 31, pl. 24.—Aud. B. Am. fol. ed. 1831, pl. 22; oct. ed. i, 1840, 90, pl. 22; Orn. Biog. ii, 1831, 246, pl. 142.—Nutt. Man, i, 1832, 58.—Cass. in Baird's B. N. Am. 1858, 13, (s. g. *Tinnunculus*).—Coues, Key, 1871, 15; Check List, 1874, No. 346; 2d ed. 1882, No. 508; B. N. W. 1874, 349.
Falco (*Tinnunculus*) *sparverius* B. B. & R. Hist. N. Am. B. iii, 1874, 169 (var. *sparverius*).
Tinnunculus sparverius Vieill. 1807.—Baird, Cat. N. Am. B, 1859, No. 13.—Ridgw. Nom. N. Am. B. 1881, No. 420.
Falco isabellinus Swains. Anim. in Menag. 1879, 281 (Cayenne).
Falco (*Tinnunculus*) *sparverius* var. *isabellinus* B. B. & R. Hist. N. Am. B. iii, 1874, 167, 171.
Tinnunculus sparverius isabellinus Ridgw. Nom. N. Am. B. 1881, No. 420*a*.
Falco sparverius isabellinus Coues, 2d Check List, 1882, No. 509.

Sp. Char. *Adult male* (No. 12,025, Washington, D. C.: W. Wallace). Forehead, lateral and posterior regions of the crown, occiput, and wings, bluish ash. Crown, nape, scapulars interscapulars, rump, upper tail-coverts, and tail, fine cinnamon-rufous; scapulars and back barred with black, the bars broadest and most conspicuous posteriorly. Tail tipped with white, and with a broad, sharply defined subterminal zone of black, about one inch in width; lateral feather, with outer web and terminal half of inner ashy white, the later with one or two distinct transverse spots of black anterior to the terminal one. Wing-

* *Hist. N. Am. B.* iii, pp. 150, 151.

coverts with more or less conspicuous cordate spots of black, rather sparsely distributed; basal two thirds of secondaries, and whole of primaries, deep black,—the latter whitish around the terminal margin, and with nine transverse bands of white on inner web of longest (second), the white rather exceeding the black, the points of which do not reach the edge of the feather; lining of the wing white, with conspicuous cordate spots of black. Front and superciliary region more hoary than the forehead, almost approaching white. Whole lateral region of the head, with chin, throat, and lower parts, white; the neck, breast, and sides, however, with a deep tinge of ochraceous, the tint hardly approaching the depth of color seen on the nape. On the head there are (considering both sides) seven black spots,—the first originating in front of the bare anteorbital space (leaving the lores white), and extending in a stripe downward across the malar region, forming a conspicuous "mustache;" the second crosses the tips of the ear-coverts, in the form of an oblong transverse spot; the third is smaller, situated as far behind the last as this is posterior to the "mustache," crossing the side of the neck. The last is an odd nuchal spot, separating the ash of the occiput from the rufous of the hind-neck. Breast and sides with circular or cordate spots of pure black, these varying in size, but generally larger on the sides. Other lower parts immaculate. Wing formula, 2=3-4, 1. Wing, 7.10; tail, 4.50; tarsus, 1.32; middle toe, .98; culmen, .45.

Adult female (No. 10,751, Fort Bridger, Utah: C. Drexler). Blue above confined to the head, which shows rufous patch as in the male; entire upper parts rufous, lighter and less purplish than in the male, everywhere barred with black. Tail with twelve sharply defined narrow bars of black, the subterminal broadest, and about three eights of an inch in width. Longest primary with eleven transverse spaces of pale rufous, nearly twice as wide as the dusky ones, which scarcely touch the edge. Beneath yellowish white, paler than in the male; breast and sides with rusty longitudinal spots. Head as in the male. Wing, 7.60; tail, 5.20; tarsus, 1.50; middle toe, .90; bill, .50. Wing formula, 2=3-4-1.

Young male (No. 5,581, Medicine Bow Creek, Nebraska, August 7, 1856: W. S. Wood.) Exactly like the adult male, but with rufous darker, approaching to chestnut; spots beneath inclining to a tear-shaped form, and, though more numerous, not so well defined as in the adult; also rufescent tinge beneath more general; blue of the wings with scarcely any spots; white terminal band of tail tinged with rufous. Sometimes the two or three outer feathers are clouded with ash, and possess indication of bars, formed of irregular black spots.

Young female (No. 40,520, Fort Rice, Dakota: S. M. Rothhammer). Generally like the adult, but with rufous above darker, approaching ferruginous; the bars everywhere broader, and purer black; rufous vertical patch streaked centrally with black; spots beneath larger, darker, approaching reddish umber.

Variations. While perhaps a majority of specimens of this species agree very nearly with those described above, there is nevertheless a very wide range of individual variation, in each plumage. Specimens from the eastern United States are apparently more variable in their markings than western examples, and this is true of any locality within that region. The extreme variation reached in this portion of the continent is that plumage upon which Swainson based his *Falco isabellinus*, which is characterized (1) by the uniform dark plumbeous pileum, the usual rufous crown-spot being absent or much reduced in size; (2) by the whole breast and jugulum, in the adult male, being immaculate deep ochraceous or buff, the few spots, should any be present, confined to the sides. The females of this style are much darker colored than those in the normal

plumage, and, like the males, usually lack the rufous crown-patch.

The Sparrow Hawk is the American representative of the Kestril of Europe (*Tinnunculus tinnunculus*), a considerably larger but otherwise very similar bird. The common note is peculiar, consisting of a protracted, not unmusical chatter, difficult to describe, but when once heard always to be recognized afterward. Neglected fields with old dead trees are the favorite abode of the Sparrow Hawk, for the lofty naked branches are a convenient and commanding position from which to survey the surroundings, while the knot-holes or deserted excavations of the larger woodpeckers afford cosy and secure houses for their nests. Upon a lofty branch the Sparrow Hawk may be seen resting or patiently "waiting for something to turn up"; sitting quietly, in an upright position, sometimes for an hour or more. Should a thoughtless mouse steal incautiously from her nest for a ramble, the quick eye of its watchful enemy detects it. He first dives from his perch and flies directly over the object in view. Should the latter be quiet for a while, the hawk poises itself in mid-air, its fan-like tail widely expanded, and its head lowered, waiting for a favorable opportunity to descend upon its intended victim. But the mouse is usually rather restless, running first to one point, then, after a short halt, zigzagging off to another. The hawk, however, follows every movement, shooting rapidly off and hovering temporarily exactly to correspond with the movements of the unsuspecting mouse. When thus engaged it is sure to attract attention, and this characteristic of the species is doubtless familiar to sportsmen as well as to all people used to country scenes. When it alights, the Sparrow Hawk plunges upon the branch, closes its wing with a nervous snap, and tilts its expanded tail up and down, at the same time turning its head watchfully from side to side.

Instances have been known where this hawk deposited its eggs in a deserted crow's nest; but it is seldom that they expose them in this manner. There is usually no nest, but the eggs are laid upon the rubbish at the bottom of the hole.

The eggs are generally five in number, but range from three to seven, the latter number, however, being but seldom found in one nest. In shape they are nearly spherical, but little difference in size and contour being observable in the two ends; their length ranges from 1.32 to 1.48 inches, the average being about 1.38; and in breadth they measure from 1.08 to 1.20 inches, with an average diameter of 1.13. The ground color of the eggs varies from white

to a rather deep buff or cream-color, which is relieved by a greater or less amount of brown and reddish spotting; the spots are nearly always small, and usually rather scattered, but sometimes they are thickly sprinkled over the entire surface; the markings are generally of several shades of rusty brown, but the tint varies from umber to reddish chestnut.

Subfamily **PANDIONINÆ**.—The Ospreys.

Char. Outer toe reversible. Claws very large and strongly curved, of equal length, their under side narrowed and rounded. Plumage without aftershafts, that of the thighs very close and compact, the feathers short.

The above characters separate the Ospreys from all other diurnal Accipitres. (See page 426.) The subfamily includes a single genus, *Pandion*, which occurs throughout the temperate and tropical portions of the globe.

Genus **PANDION** Savigny.

Pandion Savign. Desc. de l' Egypte, 1809, 272. Type *Falco haliaëtus* Linn.

Gen. Char. Bill inflated, the cere depressed below the arched culmen; end of bill much developed, forming a strong, pendent hook. Anterior edge of nostril touching edge of cere. Whole of tarsus and toes (except terminal joint) covered with rough, somewhat imbricated, projecting scales. Outer toe versatile; all the claws of equal length. In their shape, also, they are peculiar; they contract in thickness to their lower side, where they are much narrower than on top, as well as perfectly smooth and rounded; the middle claw has the usual sharp lateral ridge, but it is not very distinct. All the toes perfectly free. Tibiæ not plumed, but covered compactly with short feathers, these reaching down the front of the tarsus below the knee, and terminating in an angle. Primary coverts hard, stiff, and acuminate, almost as much so as the quill themselves; third quill longest; first longer than fifth; second, third, and fourth sinuated on outer webs; outer three deeply emarginated, the fourth sinuated on inner webs.

Pandion haliaetus carolinensis (Gmel.)

AMERICAN OSPREY.

Popular synonyms. Fish Eagle; Fish Hawk.

Falco carolinensis Gmel. S. N. i, 1788, 263.

Pandion carolinensis Aud. B. Am. 1831, pl. 81; Orn. Biog. i, 1831, 415.—Cass. in Baird's B. N. Am. 1858, 44.—Baird, Cat. N. Am. B. 1859, No. 44.

Pandion haliaëtus var. *carolinensis* Ridgw. 1870.—B. B. & R. Hist. N. Am. B. iii, 1874, 183, 184.

Pandion haliaëtus carolinensis Ridgw. Nom. N. Am. B. 1881, No. 425.

Pandion haliaëtus Aud. B. Am. i, 1840, 64, pl. 15; Orn. Biog. i, 1831, 415.—Coues, Key, 1872, 219; Check List 1874, No, 360; 2d ed. 1882, No. 530; B. N. W. 1874, 367.

Hab. Whole of North America, and south through West Indies and Middle America to northern Brazil, Trinidad, and Panama. Represented in the Palæarctic Region by the true *P. haliaëtus* (Linn.), and in the Australian Region by *P. haliaëtus leucocephalus* (Gould).

Sp. Char. *Young male* (No. 17,227, San José, Lower California, December 15, 1859, J. Xantus). Upper surface dark vandyke-brown, with a faint purplish cast; quills black. Every feather with a conspicuous sharply defined terminal crescent of pure white. Tail

brownish drab, narrowly tipped with white, and crossed with seven (one concealed) regular bands of dusky; inner webs almost wholly white, the black bands sharply defined and continuous; shafts entirely white. Ground color of the head, neck, and entire lower parts pure white; a broad stripe from the eye back across upper edge of the ear-coverts to the occiput brownish black; white head also sparsely streaked with blackish, these streaks suffusing and predominating medially; nape faintly tinged with ochraceous, and sparsely streaked. Breast with large cordate spots of brown, fainter than that of the back, a median spot on each feather, the shaft black; rest of lower parts immaculate. Lining of the wing white, strongly tinged with ochraceous; the brown of the outer surface encroaching broadly over the edge. Under primary coverts with broad transverse spots or bars; under surface of primaries grayish white anterior to the emargination, irregularly mottled with grayish; axillars immaculate. Wing formula, 2=3, 4-1, 5. Wing, 20.00; tail, 8.80; culmen, 1.35; tarsus, 1.10-2.15; middle toe, 1.90; outer, 1.75; inner, 1.40; posterior, 1.15; posterior outer and inner claws of equal length, each measuring 1.20 (chord); middle, 1.15. "Iris yellow; feet greenish yellow."

Adult male. Similar, but upper parts uniform dusky brown, and the breast very slightly (often not at all) spotted.

Adult female (No. 290, Carlisle, Pa., April 17, 1841, S. F. Baird). Similar to adult male but breast rather more spotted. Wing formula, 3, 2-4-1, 5. Wing, 20.50; tail, 9.15; culmen, 1.35; tarsus, 2.15; middle toe, 1.70.

The specimens described are those having the breast most distinctly spotted. Many others have the breast immaculate, this being the rule in the American bird, especially the adult male. Specimens vary, in length of wing from 17.50 to 20.50. Contrary to the usual rule in this family, the male appears to exceed the female in size.

Measurements.

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
Male.....	19.00-20.50	10.00-10.50	1.35	2.25-2.40	1.80-1.85	5
Female.....	18.75-19.00	8.80- 9.50	1.25-1.35	2.00-2.25	1.70-1.80	4

Second and third quills longest; first shorter or longer than fifth.

The Fish Hawk is a common species on all the larger waters of the State. It is a summer resident, though in the southern portion individuals have occasionally been observed during mild winters. From *History of North American Birds*, Vol. III., pp. 188, 189, we quote the following respecting the habits of this species:

"I can find no instance on record where our Fish Hawk has been known to molest any other bird or land animal, to feed on them, though their swiftness of flight, and their strength of wing and claws, would seem to render such attacks quite easy. On their arrival the Fish Hawks are said to combine, and to wage a determined war upon the White-headed Eagles, often succeeding by their numbers and courage in driving them temporarily from their haunts.

But they never attack them singly. The Fish Hawk nests almost invariably on the tops of trees, and this habit has been noticed in all parts of the country. It is not without exceptions, but these are quite rare. The trees on which their nests are built are not unfrequently killed by their excrement or the saline character of their food and the materials of their nest. The bird is bold and confiding, often constructing its nest near a frequented path, or even upon a highway.

"The nests are usually composed externally of large sticks, often piled to the height of five feet, with a diameter of three. In a nest described by Wilson, he found, intermixed with a mass of sticks, corn-stalks, sea-weed, wet turf, mullein-stalks, etc., the whole lined with dry sea-grass (*Zostera marina*) and large enough to fill a cart and be no inconsiderable load for a horse.

"They are very devoted in their attentions to their mates, and supply them with food while on the nest.

"In some localities the Fish Hawk nests in large communities as many as three hundred pairs having been observed nesting on one small island. When a new nest is to be constructed, the whole community has been known to take part in its completion. They are remarkably tolerant towards smaller birds, and permit the Purple Grakle (*Quiscalus purpureus*) to construct its nests in the interstices of their own. Wilson observed no less than four of these nests thus clustered in a single Fish Hawk's nest, with a fifth on an adjoining branch."

Subfamily **ACCIPITRINÆ**.—The Kites, Hawks, and Eagles.

Char. Outer toe not reversible, and claws graduated in size, with their under surface grooved, or at least not contracted; bill without distinct teeth in connection with a small circular nostril enclosing a distinct long tubercle. Other characters extremely variable.

The variations of form among the numerous members of this extensive subfamily are so great that it becomes a difficult matter to diagnose it briefly. A fuller diagnosis may be found on page 426, which, taken in connection with the one given above, should enable the student to identify without difficulty a bird belonging to this subfamily.

It is not claimed that the following arrangement is perfectly natural, since it is intended expressly as a convenient artificial analysis to facilitate identification of the North American genera.

A. Wing less than 18 inches; inner webs of not more than four or five outer quills distinctly emarginated.

a[1]. Lower half, or more, of tarsi naked.

b[1]. Front of tarsi without transverse scutellæ.

1. **Elanoides.** Tail excessively forked, the lateral rectrices more than twice as long as the middle pair. Claws grooved beneath. Tarsi covered with large, irregular scales.

2. **Elanus.** Tail double-rounded. Claws rounded on their under side. Tarsi covered with minute roundish scales.

b[2]. Front of tarsi with transverse scutellæ.

c[1]. Tail emarginate, and bill greatly hooked or else distinctly notched and toothed.

3. **Ictinia.** Bill Falcon-like, with distinct, though not prominent, notch and teeth. Feet small and robust, the claws not unusually elongated.

4. **Rostrhamus.** Bill very slender and greatly hooked, entirely devoid of notch or tooth. Feet slender, the claws unusually lengthened. (Extralimital; tropical.)

c[2]. Tail truncate or rounded, or if emarginate the bill neither greatly hooked nor distinctly notched.

d[1]. Form slender, the head proportionally small, the legs slender, claws very acute, and tail lengthened. Bill comparatively weak, compressed, high through the base, the culmen much ascending basally, and the cere decidedly arched.

5. **Circus.** Face surrounded by a "ruff" of stiffened, differently formed, feathers, as in the owls. Tarsus more than twice as long as the middle toe. Wing very long, outer four primaries with inner webs sinuated.

6. **Accipiter.** Face without ruff. Tarsus less than twice the length of the middle toe. Wing short, very concave beneath, the outer quill much bowed, the five outer with inner webs emarginated.

d[2]. Form short and heavy, the head larger, tail shorter, and legs more robust, with claws less acute. Bill stronger, less compressed, lower through the base, the upper outline less ascending basally, and cere less arched.

7. **Parabuteo.** Form heavy, the wings and tail moderately long, and feet very robust; bill rather elongated, the commissural lobe prominent, and the base of the culmen somewhat depressed. Fourth quill longest; outer five with inner webs cut. Lores naked, and almost destitute of bristles. (Extralimital.)

8. **Onychotes.** Outstretched feet reaching beyond end of tail; tibial plumes short, close, not reaching below the joint. Wing short, rounded, very concave beneath, the fourth quill longest; outer five with inner webs sinuated. Tail short, but little more than half the wing, slightly rounded. Claws very long and extremely acute. (Extralimital.)

9. **Asturina.** Bill and feet as in *Parabuteo*; lores densely bristled; wing short, rounded, concave beneath, the third to fourth quills longest; outer four with their inner webs cut.

10. **Buteo.** Form of *Parabuteo*, but primaries longer and more pointed, the fourth usually longest, and the outer three or four with inner webs cut. Tail moderate, or rather short, nearly even, or slightly rounded.

a[2]. Tarsus densely feathered to the base of the toes.

11. **Archibuteo.** Feathering of the tarsus interrupted behind by a bare strip along the full length. Nostril broadly oval, obliquely horizontal; bill weak, the upper outline of the cere much ascending basally. Feathers of the nape normal, blended. Third to fourth quills longest; outer four or five with inner webs cut.

B. Wing more than 20 inches; inner webs of outer six primaries distinctly emarginated.

a^1. Tarsus densely feathered, all round, to the base of the toes.

12. **Aquila.** Nostril narrowly oval, obliquely vertical. A very distinct web between middle and outer toes. Feathers of the nape distinctly lanceolate.

a^2. Tarsus with lower part naked.

b^1. Tail short, much less than two thirds the pointed wing; feet moderately robust, with upper half of tarsus feathered in front. Head crestless; feathers of neck all round, distinctly lanceolate. No distinct web between middle and outer toes

13. **Haliæetus.** Tail rounded, of 12 rectrices. Upper outline of cere nearly straight; nostrils with lower end rounded, opening rather abruptly inward.

14. **Thalassoaëtus.** Tail cuneate, of 14 rectrices. Upper outline of cere much arched; nostrils with lower end pointed and beveled gradually to the level of the cere. (Extralimital; Kamtschatkan—and Aleutian?)

b^2. Tail long, truncated, two thirds or more the very broad, rounded wing. Feet enormously robust, with nearly the whole tarsus naked. Head with a broad erectile crest of lengthened broad and rounded feathers; feathers of neck all round, broad and rounded. A moderately developed web between middle and outer toes.

15. **Thrasaëtus.** Secondaries greatly developed, both in length and breadth, reaching to the end of primaries; fifth to seventh quills longest, the outer seven with inner webs shallowly sinuated. Claws enormously large and powerful, but rather obtuse, the inner and posterior ones equal to their digits in length. (Extralimital; tropical.)

Genus **ELANOIDES** Vieillot.

Elanoides Vieillot, Nouv. Dict. d'Hist. Nat. xxiv, 1818, 101. Type, *Falco forficatus* Linn. *Nauclerus* Auct. *nec* Vigors, 1825.

Char. *General external characters.* Bill rather small and narrow, intermediate between that of *Pandion* and *Elanus;* compressed anteriorly, and very broad at the base; the terminal hook well produced, the tomia very regular; cere ascending; nostril broadly oval, oblique; gonys nearly straight; tomium of the lower mandible very convex. Lores densely feathered, the feathers bristle-like. Feet robust; tarsus a little longer than the middle toe, covered with large, irregular, hexagonal scales; toes with transverse scutellæ nearly to the base; claws short, strong, abruptly flattened beneath, the edges very sharp, the middle claw bent laterally, the inner side very convex, the projecting edge sharp and entire. No web between the toes. Primaries and rectrices excessively elongated and narrow, the former more than twice the length of the secondaries. Outer tail-feathers about equal to the primaries, and more than twice as long as the middle pair.

*Osteological characters.** Cranium very similar in contour and proportions to that of *Pandion,* but presenting important modifications in minor details. Superciliary process of the lachrymal distinct from the frontal, which is completely anchylosed with the nasal; inner convoluted edge of the palatines scarcely produced downward; nasal septum completely ossified; pterygoid bone narrow, and of a uniform width throughout its length. Sternum similar to that of *Pandion,* having, like it, a pair of indentations on the posterior margin, and destitute of foramina; the clavicle, coracoids, and scapula are also very similar.

Anatomical characters. "Palate flat with two longitudinal ridges; upper mandible with a tuberculate median ridge, lower deeply concave; posterior aperture of the nares oblongolinear, with the edges papillate. Tongue somewhat decurved, emarginate, and finely papillate at the base, flat above, its tip narrow and acutely emarginate. Œsopha-

* Of this genus we have seen only the skull and sternum.

gus of nearly uniform width, being destitute of crop, and thus resembling that of the owls; its walls extremely thin; stomach very large, round, slightly compressed, its muscular coat very thin, and composed of a single series of fasciculi. Intestine short and rather wide; pylorus with three knobs, duodenum forming a loop in the usual manner; no cæca; rectum short, with a large globular dilatation."—MACGILLIVRAY.

Pterylographical characters. "Inner branch on the jugular part distinct but short; outer branch entirely free. Dorsal portion of the spinal tract usually long."* (NITZSCH.) Contour-feathers with aftershafts. Lumbar tract present. Remiges, 23.

Apparently more nearly related to *Pernis*, *Leptodon*, *Regerhinus*, and allied forms than to any other genera, the genus *Elanoides* yet stands isolated from these by the absence of many characters common to them, and by the possession of features peculiarly its own. In general external form, it approaches quite nearly the genus *Milvus*, but when compared closely, the two are found to possess no real affinities of structure. The same is true of its relationship to *Nauclerus riocouri*, usually placed in the same genus, but which is more intimately related to *Ictinia*, *Elanus*, and their affines.

The genus contains but a single species, the *E. forficatus*, which is peculiar to America, belonging to the tropical and subtropical portions on both sides of the equator. The species is noted for the elegance of its form and the beauty of its plumage, as well as for the unsurpassed easy gracefulness of its flight.

Elanoides forficatus (Linn.)

SWALLOW-TAILED KITE.

Popular synonyms. Swallow-tailed Hawk; Fish-tail Hawk; Snake Hawk; Fork-tail Snake Hawk; Mackerel-tail Hawk; White-headed Swallow Kite.

Falco forficatus LINN. S. N. ed. 10, i, 1758, 89.

Nauclerus forficatus RIDGW. 1870.—B. B. & R. Hist. N. Am. B. iii, 1874, 192.—COUES, B. N. W. 1874, 332.

Elanoides forficatus COUES, Proc. Acad. Nat. Sci. Phil. 1875, 345; 2d Check List, 1882, No. 493.—RIDGW. Nom. N. Am. B. 1881, No. 426.

Falco furcatus LINN. S. N. ed. 12, i, 1766, 129.—WILS. Am. Orn. vi, 1812, 70, pl. 51, figs. 1, 3.—AUD. B. Am. fol. ed. 1831, pl. 72; Orn. Biog. i, 1830 368; v, 1839, 371.

Nauclerus furcatus VIG. 1835.—AUD. B. Am. i, 1840, 78, pl. 18; Synop. 1839, 14.—CASS. in Baird's B. N. Am. 1858, 36.—BAIRD, Cat. N. Am. B. 1859, No. 34.—COUES, Key, 1872, 211; Check List, 1874, No. 337.

HAB. Whole of tropical and subtropical America, except West Indies; north, casually to Massachusetts and Michigan, more regularly to Maryland, Illinois, Iowa, Minnesota, etc. Much more numerous in the Mississippi Valley than east of the Alleghanies.

SP. CHAR. Wing, 15.40–17.70; tail, 12.50–14.50; culmen, .70–.80; tarsus, 1.00–1.30; middle toe, 1.00–1.20. Head, neck, entire lower parts (including lining of the wing and basal half of the secondaries underneath), and band across the rump pure white. Back,

* NITZSCH gives the above characters of a group in which he includes *Milvus regalis*, *M. ater*, and *Elanoides forficatus*.

wing, and tail plain polished blackish, with varying reflections; tertials white, with blackish tips. *Adult.* The white of the head and neck immaculate; back, scapulars and lesser wing-coverts with a soft reflection of dark purplish bronze, the other black portions with a glaucous or chalky cast, with a green reflection in certain lights. *Young.* Feathers of the head and neck with dusky shaft-streaks; the black above less glossy, more brownish, a bottle-green reflection replacing the soft purplish bronze on the back and shoulders; remiges, rectrices, and primary coverts with a narrow terminal border of white.

There is little variation in the coloration of this beautiful species, the only one presenting differences particularly noticeable being No. 56,099 (said to be from England), in which the black in its entire extent is nearly uniform, and glossed with a uniform violaceous slate. This appearance, however, is probably caused by the greater age of the feathers.

The fresh colors of an adult male, shot at Mt. Carmel, Illinois, August 1, 1870, were as follows:

"Bill deep black, the basal half of the lower mandible, the basal portion of the upper beneath the cere, the cere, rictus, and naked eyelids, plumbeous blue; feet similar but paler; claws grayish brown; *iris very dark brown;* interior of the mouth bright cobalt-blue." (No. 84,480, male, Mt. Carmel, Ill., Aug. 1, 1870. Length, 22.75; extent, 50.80.)

In former years common throughout the State, and in some portions even at times abundant, this, the most graceful of all the birds of prey, is becoming scarcer every year. In the northeastern portion of the State it was once common, according to Mr. Kennicott, but at the time he wrote* (1854) it had become rare; while in 1876, Mr. Nelson says† that he can testify to its scarcity, "only two or three instances of its occurrence within the last twenty years having been ascertained." It feeds with the greatest ease while flying, the food being held in the feet, which are reached gently forward at the same moment the bird's head is lowered to tear a mouthful from the object that is being eaten.

Genus **ELANUS** Savigny.

Elanus Savign. Desc. de l'Egypte, 1809, 284. Type *Falco melanopterus* Daud., = *F. cæruleus* Desf.

Gen. Char. Bill rather small, very wide basally, much compressed anteriorly, the tip well produced; lower mandible declinate, obliquely truncated, its tomium greatly arched; superior tomium somewhat "bulged" laterally, and slightly sinuated; gonys straight, or very slightly convex. Nostrils roundish, or oval and horizontal, in middle

* Illinois Agricultural Report, 1853-54.

† Bull. Essex Inst., viii, 1876, p. 118.

of the cere. Feet small, but very robust; tarsus about equal to middle toe; outer toe shorter than the inner, and about equal to the hallux; web between outer and middle toe just apparent; claws small, but sharp, and well curved, the under surface rounded and just perceptibly flattened; middle claw with the sharp protecting lateral ridge very prominent. Tarsus and toes (except terminal joint of the latter) covered uniformly with minute roundish scales. Wing long; second to third quill longest; first intermediate between second and fourth. First quill with inner web emarginated, near the end; second, sinuated. Tail double-rounded, more than one half the wing.

Elanus leucurus (Vieill.)

WHITE-TAILED KITE.

Popular synonym. Black-shouldered Kite.

Milvus leucurus VIEILL. Nouv. Dict. xx, 1818. 556.

Elanus leucurus BP. 1838.—CASS. in Baird's B. N. Am. 1858, 36.—BAIRD, Cat. N. Am. B. 1859, No. 35.—COUES, Key, 1882, 211; Check List, 1874, No. 67.—B. B. & R. Hist. N. Am. B. iii, 1874, 197, 198.

Falco dispar TEMM. Pl. Col. i, 1825, pl. 319 (=*juv.*).—AUD. B. Am. 1838, pls. 351, 352; Orn. Biog. iv, 1838, 367.

Elanus dispar CUV. Reg. An. ed. 1829, i, 334.—NUTT. Man. 1833, 93.—AUD. Synop. 1839, 13; B. Am. i, 1840, 70, pl. 16.

Elanus glaucus "(BARTR.)" COUES, Proc. Phil. Acad. (*ex Falco glaucus* BARTR. Travels, 1791, 290); 2d Check List, 1882, No. 492.—RIDGW. Nom. N. Am. B. 1881, No. 427.

HAB. The whole of continental tropical and subtropical America; south to Paraguay, Argentine Republic, and Chili, north to southern United States (Texas to Florida and South Carolina), Indian Territory, New Mexico, and California; occasional (breeding?) in extreme southern portion of Illinois.

SP. CHAR. *Adult.* Upper surface, including occiput, nape, interscapulars, scapulars, rump, upper tail-coverts, and wings (except lesser and middle coverts), soft, delicate, rather light bluish cinereous, becoming gradually white on the anterior portion of the head, above. Rest of the head, with the tail, lining of the wing, and entire lower parts, pure white, sometimes with a very faint tinge of pale pearl-blue, laterally beneath; two middle tail-feathers ashy, but much lighter than the rump; shafts of tail-feathers black, except toward ends. Bristly loral feathers (forming ante-orbital spot, extending narrowly above the eye), a very large patch on the shoulder, covering lesser and middle wing-coverts, and large quadrate spot on under side of wing (on first row of primary coverts), deep black. Under side of primaries deep cinereous (darker than outer surface): under surface of secondaries nearly white. Second quill longest; third scarcely shorter (sometimes equal, or even longest); first longer than, or equal to the fourth. Tail slightly emarginated, the longest feather (next to outer) being about .50 longer than the middle, and .60 (or more) longer than the lateral, which is shortest.

Male. Wing, 11.80–12.50; tail, 7.30–7.60; culmen, .66–.80; tarsus, 1.30–1.50; middle toe, 1.00–1.15 (eight specimens).

Female. Wing, 11.60–12.75; tail, 7.20–7.80; culmen, .70–.72; tarsus, 1.25–1.40; middle toe, 1.10–1.20 (eight specimens).

Specimens not perfectly adult have the primary coverts, secondaries, and inner primaries, slightly tipped with white.

Still younger individuals have these white tips broader, the tail more ashy, and the upper parts with numerous feathers of dull brown, tipped narrowly with white; the breast with sparse longitudinal touches of brownish.

Young female (No. 48,826, Santiago, Chili, May, 1866: Dr. Philippi). Occiput and nape thickly marked with broad streaks of dusky, tinged with rusty; scapulars umber-brown, tipped with rusty; all the feathers of the wings narrowly tipped with white; tail-feathers with a subterminal irregular bar of dark ashy; breast tinged with rufous, and with badly defined cuneate spots of deeper rusty. Wing, 12.25; tail, 7.50.

An adult female, obtained at San Francisco, California, February 11, 1868, had the "bill black, eyes orange-red, tarsi and toes yellow." Total length 16½ inches, extent 42 inches.

As to the occurrence of this species in Illinois, we have little information, the only record being that of the writer's previous lists, based on a pair observed near the river at Mt. Carmel during the summer of 1863 or 1864. It is very likely of not uncommon occurrence during summer in suitable places in the extreme southern counties of the State.

Genus **ICTINIA** Vieillot.

Ictinia Vieill. Analyse, 1816, 24. Type, *Falco mississippiensis* Wils.
Nertus Boie, Isis, 1828, 314. Type, *Falco plumbeus* Gmel.

Gen. Char. Form falcon-like; the neck short, shoulders broad, wings long and pointed, the rectrices strong and stiff, claws strongly curved and acute, and general organization robust. Bill short and deep, "bulged" laterally, the terminal hook abruptly compressed; tomia irregularly toothed and notched; gonys very convex, ascending terminally. Cere narrow; nostril very small, roundish. Feet small but robust, the tarsus about equal to the middle toe; outer toe decidedly longer than the inner, which is equal to the hallux; web between it and the middle toe well developed; tarsus with a distinct frontal series of broad transverse scutellæ; claws short, but strongly curved, very sharp, grooved beneath. Third quill longest; first of variable proportion with the rest; outer two with inner webs sinuated. Tail a little more than half the wing, emarginated, or nearly even, the feathers broad, with nearly truncated, though rounded, ends.

Structurally, *Ictinia* seems to be most nearly related to *Harpagus*, a tropical American genus, which, however, differs much in general appearance, being of decidedly hawk-like aspect. The structural differences between the two genera may be tabulated as follows:

Ictinia. Tomial tooth simple. Tarsus nearly equal to, or but little longer than, the middle toe; posterior toe equal to the outer. Wing very long, reaching to or beyond end of the tail, the primaries greatly developed, almost twice the length of the secondaries. Tail about one half the wing, even, or slightly emarginated.

Harpagus. Tomial tooth double. Tarsus about one and a half times the middle toe; posterior toe decidedly shorter than the outer. Wing short, reaching only to about the middle of the tail, the primaries only moderately developed, less than one and a half times the secondaries. Tail nearly equal to wing, slightly rounded.

Ictinia mississippiensis (Wils.)

MISSISSIPPI KITE.

Popular synonyms. Blue Kite; Blue Snake Hawk.

Falco mississippiensis WILS. Am. Orn. iii, 1811, 80, pl. 25, fig. 1.

Ictinia mississippiensis BP. 1850.—CASS. in Baird's B. N. Am. 1858, 37.—BAIRD, B. N. Am. 1859, No. 36.—COUES, Key, 1872, 211; Check List, 1874, No. 335.

Fa'co plumbeus "GMEL." AUD. B. Am. 1834, pl. 117; Orn. Biog. ii, 1834, 108; v, 1839, 374 (*nec* GMEL.).

Ictinia plumbea NUTT. Man. i, 1833, 92 (*nec* VIEILL.)—AUD. Synop. 1839, 14; B. Am. i, 1840, 73, pl. 17.

Ictinia subcærulea "(BARTR.)" COUES, Proc. Phil. Acad. (*ex Falco subcæruleus* BARTR. Trav. 1791, 290); 2d Check List, 1882, No. 491.—RIDGW. Nom. N. Am. B. 1881, No. 428.

HAB. More southern eastern United States; north, regularly, to South Carolina, and southern Illinois, more rarely to Iowa and Wisconsin, and casually to Pennsylvania; south through eastern Mexico and Guatemala.

SP. CHAR. *Adult male* (No. 84,483, Fox Prairie, Richland Co., Ill., August 19, 1871). Head, neck, secondaries, and entire lower parts plumbeous ash, becoming, by a gradual transition, lighter on the head and secondaries, where the shade is pale cinereous; the head anteriorly, and the tips of the secondaries being silvery white. Lores and eyelids black. Rest of the plumage dark plumbeous, approaching plumbeous black on the lesser wing-coverts, primaries and upper tail-coverts, the tail being nearly pure black. Primaries with an indistinct narrow concealed stripe of chestnut-rufous on the outer webs, and larger spots of the same on the inner webs; feathers of the head, neck, and lower parts abruptly pure white beneath the surface, this showing in partly exposed spots on the pectoral region and crissum. Scapulars also with large concealed white spots. Shafts of primaries and tail-feathers black on both sides. Wing formula, 3, 2-4-5-6, 1. First primary angularly, the second concavely, emarginated. Tail emarginated, lateral feather longest; depth of fork, .40. Wing, 11.75; tail, 6.80; culmen, .63; tarsus, 1.20; middle toe, 1.15.

Adult female (Fox Prairie, Richland Co., Ill., August 19, 1871). Similar to the male, but head and secondaries decidedly darker, hardly approaching light ash; scarcely any trace of rufous on the primaries, none at all on outer webs; shafts of tail-feathers white on under side. Wing, 11.80; tail, 7.25. Bill, cere, eyelids, and interior of mouth, deep black; iris deep lake-red; rictus orange-red; tarsi and toes pinkish orange-red, lower part of tarsus and large scutellæ of toes dusky. (Notes from fresh specimens, the ones above described.)

Immature male (transition plumage; No. 84,484, Fox Prairie, Richland Co., Ill., August 21, 1871). Similar to the adult female, but the white spots on basal portion of pectoral and crissal feathers distinctly exposed; secondaries not lighter than rest of the wing. Tail-feathers with angular white spots extending quite across the inner webs, producing three distinct transverse bands when viewed from below. Inner web of outer primary mostly white anterior to the emargination. Wing, 10.50; tail, 6.25. Color of bill, etc., as in the adult, but interior of mouth whitish, and the iris less pure carmine.

Immature female (Coll. Philadelphia Academy, Red Fork of the Arkansas, 1850; Dr. Woodhouse). Similar to the last. Wing, 11.10; tail, 6.31.

Young female (first plumage; Coll. Philadelphia Academy, North Fork Canadian River, September 19, 1851: Dr. Woodhouse). Head, neck, and lower parts white, with a yellowish tinge; the most perceptible on the tibiæ. Each feather with a median longitudinal ovate spot of blackish brown, more reddish on the lower parts. The chin, throat, and a broad superciliary stripe, are immaculate white. Lower tail-coverts each with a median acuminate spot of rusty, the shaft black. Upper parts brownish black; wing-coverts, scapulars, and interscapulars, feathers of the rump, and the upper tail-cover, narrowly

bordered with ochraceous white, and with concealed quadrate spots of the same; primary coverts, secondaries, and primaries sharply bordered terminally with pure white. Tail black (faintly whitish at tip), with three (exposed) indistinct bands of a more slaty tint; this changing to white on the inner webs, in the form of angular spots forming the bands. Lining of the wing pale ochraceous, transversely spotted with rusty rufous; under primary coverts with transverse spots of white. Wing, 11.90; tail, 6.40.

Six adult males measured as follows: Wing, 10.16–11.85; tail, 6.00–8.80; culmen, .60–.65; tarsus, 1.35–1.55; middle toe, 1.00–1.10.

Five adult females: Wing, 11.30–12.30; tail, 6.50–8.00; culmen, .60–.65; tarsus, 1.30–1.40; middle toe, 1.00–1.05.

This neat and spirited falcon-like Kite is not an uncommon bird in some localities of the southern portion of the State. It is frequently an associate of the Swallow-tail, which it rivals in the gracefulness of its flight and even excels in swiftness. In August, 1871, it was very plentiful on Fox Prairie. It was usually observed sailing about, far above the Swallow-tails, but now and then half closing the wings and pitching nearly straight downward with the velocity of an arrow, as if to strike the earth; but by a sudden extension of the wings instantly checking its rapid descent and remounting, by a steep angle, almost to the height from which it had started, the whole of the downward and upward courses unaccompanied by a single motion of the wings. This performance was sufficiently startling when done by a single bird; but when several plunged headlong simultaneously, their tracks crossing one another at various angles, the effect was impressive to an extreme degree.

Regarding his experience, in the vicinity of Cairo, Mr. Nelson writes as follows (*Bull. Essex Inst.*, IX., 1877, p. 58):

"Their power of sight is truly wonderful. I saw them repeatedly dart with unerring aim upon some luckless grasshopper, from an elevation of at least one hundred yards.

"No less remarkable in their power of flight. I repeatedly saw them dart down from a great height with such a velocity that it would seem an impossibility for them to escape being dashed to pieces on the ground, but instead, when within a few feet of the earth, they would suddenly spread their wings and the reaction would lift them with almost equal rapidity to about one half their former elevation. They were so shy that it was impossible to get within gunshot of them."

Audubon regards this species as remarkable for its devotion to its young, and narrates that in one instance he saw the female bird lift up and attempt to carry out of his reach one of her fledglings. She carried it in her claws a distance of thirty-five yards or more.

He also describes their flight as graceful, vigorous, and protracted. It feeds on the wing with great ease and dexterity. It rarely, if ever, alights on the earth; and, when wounded, its movements on the ground are very awkward. It is never known to attack birds or quadrupeds of any kind, though it will pursue and annoy foxes and crows, and drive them to seek shelter from its attacks. The Mississippi Kite is said to be by no means a shy bird, and may be easily approached when alight, yet it usually perches so high that it is not always easy to shoot it. (BREWER.)

GENUS CIRCUS LACÉPÈDE.

Circus LACÉPÈDE, Mem. de l'Inst. iii, 1806, 506. Type *Falco cyaneus* LINN.

GEN. CHAR. Form very slender, the wings and tail very long, the head small, bill weak, and feet slender. Face surrounded by a ruff of stiff, compact feathers, as in the Owls. Claws strongly curved, very acute. Wings very long, the third or fourth quills longest; first shorter than the sixth; outer three to five with inner webs sinuated. Tail very long, about two thirds the wing; rounded.

The relationships of this well-marked genus are to *Accipiter* on the one hand, and *Elanus* on the other; nearest the former, though it is not very intimately allied to either.

The species are quite numerous, numbering about twenty, of which only three are American. North America possesses but one (*C. hudsonius*, Linn.), and this with the *C. cinereus*, Vieill., of South America, is closely related structurally to *C. cyaneus* of Europe, but is sufficiently distinct.

The birds of this genus frequent open, generally marshy, localities, where they course over the meadows, moors, or marshes, with a steady, gliding flight, seldom flapping, in pursuit of their food, which consists mainly of mice, small birds, and reptiles. Their assault upon their prey is sudden and determined, like the "Swift Hawks," or the species of *Accipiter*.

Circus hudsonius (Linn.)

MARSH HAWK.

Popular synonyms. American Harrier; Ring-tailed Harrier.

Falco hudsonius LINN. S. N. ed. 12, i, 1766, 128.

Circus hudsonius VIEILL. 1807.—CASS. in Baird's B. N. Am. 1858, 38.—BAIRD, Cat. N. Am. B. 1859, No. 38.—RIDGW. Nom. N. Am. B. 1881, No. 430.

Circus cyaneus hudsonius SCHLEG. Mus. P.-B. *Circi*, 1862, 2.—COUES, 2d Check List, 1882, No. 489.

Circus cyaneus var. *hudsonius* COUES, Key, 1872, 210; Check List, 1874, No. 333; B. N. W. 1874, 327.—B. B. & R. Hist. N. Am. B. iii, 1874, 214.

Falco uliginosus GMEL. S. N. i, 1788, 278.—WILS. Am. Orn. vi, 1812, 67, pl. 51, fig. 2.

Circus cyaneus? var? *americanus* SW. & RICH. F. B.-A. ii, 1831, 55, pl. 29.

Falco cyaneus "LINN." AUD. B. Am. vi, 1843, pl. 356 (*nec* LINN.)

Circus cyaneus "BOIE," NUTT. Man. 1833, 109.—AUD. Synop. 1839, 19; B. Am. i, 1840, 105, pl. 26.

HAB. The whole of North America; south, in winter, to Panama, north to Hudson's Bay Territory and Alaska; Cuba. Breeding throughout western United States (south to Texas), and in Eastern States chiefly north of 40°.

SP. CHAR. *Adult male* (No. 10,764, Washington, D. C., December). Head, neck, breast, and upper parts light cinereous, palest anteriorly where it is uninterrupted or continuous; occiput somewhat darker, with a transverse series of longitudinal dashes of white, somewhat tinged with reddish. Back, scapulars, and terminal third of secondaries, with a dusky wash, the latter fading at tips; five outer primaries nearly black, somewhat hoary on outer webs beyond their emargination; lesser wing-coverts faintly mottled with paler, or with indistinct dusky spots. Upper tail-coverts immaculate pure white. Tail bluish cinereous, mottled with white toward base; crossed near the end with a distinct band of black, and with about five narrower, very obscurely indicated ones anterior to this; tip beyond the subterminal zone fading terminally into whitish. Whole under side of wing (except terminal third or more of primaries) pure white; immaculate, excepting a few scattered transverse dusky spots on larger coverts. Rest of under parts pure white everywhere, with rather sparse transverse cordate spots of rufous. Wing, 14.00; tail, 9.20; tarsus, 2.80; middle toe, 1.30. Third and fourth quills equal, and lon est; second intermediate between fifth and sixth; first 5.81 inches shorter than longest.

Adult female (No. 16,758, Hudson's Bay Territory: Captain Blakiston). Umber-brown above, feathers of the head and neck edged laterally with pale rufous; lores, and superciliary and suborbital stripes dull yellowish white, leaving a dusky stripe between them, running back from the posterior angle of the eye. Lesser wing-coverts spattered with pale rufous, this irregularly bordering and indenting the feathers; feathers of the rump bordered with dull ferruginous. Tail deep umber, faintly fading at the tip, and crossed by six or seven very regular, sharply defined, but obscure, bands of blackish; the alternating light bars becoming paler and more rufous toward the edge of the tail, the lateral feathers being almost wholly pale cream-color or ochraceous, darker terminally; this tint is more or less prevalent on the inner webs of nearly all the feathers. Ear-coverts dull dark rufous, indistinctly streaked with dark brown; the feathers of the facial disk fine pale cream-color, each with a middle stripe of dark brown; throat and chin immaculate dirty white, like the superciliary and suborbital stripes. Beneath dull white, with numerous broad longitudinal stripes of umber-brown; these broadest on the breast, growing gradually smaller posteriorly. Under surface of primaries dull white, crossed at wide intervals with dark brown irregular bars, of which there are five (besides the terminal dark space) on the longest quill.

Young female (No. 15,585, Bridger's Pass, Rocky Mountains, August: W. S. Wood). Upper parts very dark rich clove-brown, approaching sepia-black; feathers of the head bordered with deep ferruginous, and lesser wing-coverts much spotted with the same, the edges of the feathers being broadly of this color; secondaries and inner primaries fading terminally into whitish; upper tail-coverts tinged with delicate cream-color (immaculate). Tail with four very broad bands of black, the intervening spaces being dark umber on the two middle feathers, on the other fine cinnamon-ochre; the tip also (broadly) of this color. Ear-coverts uniform rich dark snuff-brown, feathers of satiny texture; feathers of facial disk the same centrally, edged with fine deep rufous. Entire lower parts deep reddish ochraceous or fulvous rufous, growing gradually paler posteriorly; immaculate, with the exception of a few faint longitudinal stripes on the breast and sides. Under side of wing as in the last, but much tinged with rufous.

So far as I am able to judge from the large series of specimens examined, there does not appear to be the slightest difference between eastern and western specimens, in any stage of plumage.

The American Harrier is quite distinct from the European *C. cyaneus*, although the two species are much alike in some plumages. The adult male of *C. cyaneus* is wholly destitute of the dusky subterminal bar to the tail-feathers and secondaries, and lacks the reddish markings on the lower parts, which, posterior to the jugulum, are immaculate pure white. The dimensions are also less than those of *C. hudsonius*.

Measurements of C. hudsonius.

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle Toe.	Specimens.
Male.....	12.90–13.85	9.00–9.90	.60–.70	2.85–2.90	1.20–1.30	36
Female.....	13.00–16.00	8.80–10.50	.70–.75	2.85–3.35	1.22–1.55	32

A young male, shot August 17, 1867, in the Truckee Valley, Nevada, measured 18¾ inches in length by 42 in spread of wings. The bill was deep black, more bluish basally; cere and rictus greenish gamboge-yellow, the former purer yellow on top; iris yellowish gray; tarsi and toes rich orange-yellow, the claws jet-black.

Two young females obtained in August and December, 1867, on the lower Truckee and on the shore of Pyramid Lake, Nevada, measured 19½–20¼ inches in length, and 43½–44 in extent of wings. The fresh colors were as above described, except that the specimen obtained in December had the iris dull fulvous.

The Marsh Hawk is a bird of very extensive distribution, but at the same time is by no means a well-known species except in those portions of the country where it is most abundant. In Illinois it may be observed at all seasons of the year, but, at least in the southern portion of the State, it is decidedly most numerous in winter.

"According to Audubon, the Marsh Hawk rarely pursues birds on the wing, nor does it often carry its prey to any distance before it alights and devours it. While engaged in feeding, it may be readily approached, surprised, and shot. When wounded, it endeavors to make off by long leaps; and when overtaken, it throws itself on the

back and fights furiously. In the winter its notes while on the wing are sharp, and are said to resemble the syllable *pee-pee-pee*.

"Mr. Audubon has found this Hawk nesting not only in low lands near the sea shore, but also in the barrens of Kentucky and on the table lands of the Alleghanies, and once in the high covered pine-barrens of Florida.

"After having paired, the Marsh Hawks invariably keep together, and labor conjointly in the construction of the nest, in sitting upon the eggs, and in feeding the young. Their nests are variously constructed as to materials, usually chiefly of hay somewhat clumsily wrought together into the form of a nest, but never very nicely interwoven; occasionally, in more northern localities, they are lined with feathers, in some cases with pine-needles and small twigs." (BREWER.)

GENUS **ACCIPITER** BRISSON.

GEN. CHAR. Four to five outer primaries with inner webs emarginated; third to fifth quills longest; inner toe reaching scarcely beyond the first joint of the middle toe or falling short of it.

Form slender, the tail long, the wing short and rounded, the feet slender, claws very acute. Head comparatively small; the bill rather weak. Bill nearly as deep through the base as the length of the culmen (chord), its upper outline decidedly ascending basally; maxillary tomium with a prominent "festoon." Nostril broadly ovate, obliquely horizontal. Superciliary shield very prominent. Tarsus longer than the much lengthened middle toe, the frontal and posterior series of transverse scutellæ very distinct and continuous (except in males of some of the smaller species, in which these scales are "fused" into a continuous plate). Outer toe longer than the inner. Wing comparatively short, much rounded, and very concave beneath; third to fifth quills longest, the first usually shortest, and never longer than the sixth; outer three to five with inner webs sinuated. Tail long (nearly equal to the wing), usually rounded, occasionally even, and rarely slightly emarginated.

The above diagnosis is intended to cover the characters of this genus in its most comprehensive sense. In North America there are two strongly marked subgenera, which may be characterized as follows:

Accipiter. Less than one third of the tarsus feathered in front, the feathering widely separated behind; frontal scutellæ uninterrupted at the digito-tarsal joint. (Tarsal scutellæ fused into a continuous plate in adult males of the smaller species.)

Astur. More than one third (nearly one half) of the upper part of the tarsus feathered in front, the feathering scarcely separated behind; frontal scutellæ interrupted at the digito-tarsal joint, where replaced by small scales. (Tarsal scutellæ never fused.) Size larger than typical *Accipiter*.

In South America is found a third subgenus which may be distinguished from typical *Accipiter* as follows:

Accipiter. Five outer primaries with inner webs emarginated; fourth or fifth quill longest; inner toe not reaching middle of second joint of middle toe.

Hieraspizias. Four outer primaries with inner webs emarginated; third or fourth quills longest; inner toe reaching to or beyond middle of second joint of middle toe.

Subgenus **Accipiter** Brisson.

Accipiter Briss. Orn. i, 1760, 10. Type *Falco nisus* Linn.
Nisus Cuv. Leçons Anat. Comp. i, tabl. ois. 1799. Same type.
Cooperastur Bp. Rev. et Mag. Zoöl. 1854, 538. Type *Falco stanleyi* Aud.,=*F. cooperi* Bp.

The species of this subgenus are generally of small size and slender form; but, with a graceful and apparently delicate structure they combine remarkable strength and unsurpassed daring. They differ from the species of *Astur* mainly in less robust organization. The species are very numerous, and most plentiful within the tropical regions. The Old World possesses about thirty nominal species. Tropical America has, so far as known, thirteen species, two of which are peculiar to Cuba. (These the reader may find carefully monographed in the Bulletin of the U. S. Geological and Geographical Survey of the Territories, Vol. II., No. 2, pp. 91–129.)

The two North American species may be distinguished as follows:

Common Characters. *Adults.* Above bluish slate or plumbeous, the tail with darker cross-bands and narrowly tipped with whitish; lower parts white, barred or transversely spotted with pinkish rufous or light brownish, the crissum plain white. *Young.* Above grayish brown, the feathers bordered, more or less distinctly, with rusty, and scapulars with large white spots, mostly concealed, however; tail-bands more distinct than in the adults, the spaces between them browner; lower parts white, sometimes tinged with buff (especially in younger individuals), longitudinally striped with brownish or dusky.

1. **A. cooperi.** Size large, the wing more than 8.50 inches. Tail decidedly rounded. Male: Wing, 8.85–9.40; tail, 7.80–8.30. Female: Wing, 10.00–11.00; tail, 10.00–10.50.
2. **A. velox.** Size smaller, the wing usually less than 8 inches. Tail even, or (in adult males) slightly emarginated. Male: Wing, 6.10–7.10; tail, 5.80–6.10. Female: Wing, 7.80–8.80; tail, 6.60–8.20.

Accipiter cooperi Bonap.

COOPER'S HAWK.

Popular synonyms. Stanley's Hawk; Blue Chicken Hawk: Blue Hawk; Blue Quail Hawk; Swift Hawk; Blue-backed Hawk; Blue Darter.

Falco cooperi Bp. Ann. Lyc. N. Y. ii, 1826, 433; Am. Orn. i, 1828, pl. 10, fig. 1.
Astur cooperi Bp. 1838.—Aud. B. Am. i, 1840, 98, pl. 24.
Accipiter cooperi DeKay, Zoöl. N. Y. ii, 1844, 18, pl. 4, fig. 5.—Cass, in Baird's B. N. Am. 1858, 16.—Baird. Cat. N. Am. B. 1859, No. 15, 16.—Coues, Key, 1872, 112; Check List, 1874, No. 339; 2d ed. 1882, No. 495; B. N. W. 1874, 334.—Ridgw. Nom. N. Am. B. 1881, No. 431.
Nisus cooperi Schleg. Rev. Acc. 1873, 73.—B. B. & R. iii, 1874, 230.
Falco stanleyi Aud. B. Am. 1831, pls. 36, 141; Orn. Biog. i, 1831, 186.
Accipiter mexicanus Sw. F. B.-A. ii, 1831, 45.—Cass, in Baird's B. N. Am. 1858, 17.—Baird, Cat. N. Am. B. 1859, No. 16.
Nisus cooperi var. *mexicanus* B. B. & R. Hist. N. Am. B. iii, 1874, 231.

Hab. Whole of the United States and table-lands of Mexico; north in summer to New Brunswick, the Saskatchewan, and Washington Territory; south, in winter, to Costa Rica and Veragua; breeding throughout its United States range.

Sp. Char. Wing, 8.70–11.00; tail, 7.80–10.50; culmen, 0.58–0.80; tarsus, 2.30–2.85; middle toe, 1.45–1.85. Fourth or fifth quill longest; first equal to or shorter than tenth; outer five with inner webs sinuated. Tail rounded. Tarsi usually distinctly scutellate.

Adult. Above slate-color, varying from a fine bluish to a brownish cast, the shafts of the feathers black. Pileum plumbeous black, the occipital feathers snow-white beneath the surface; primaries plain brownish slate, their shafts clear brown. Tail narrowly tipped with white, and crossed by four very regular, but sometimes not sharply defined, bands of dusky, narrower than the slaty ones, the last broadest, the first nearly obsolete, and concealed by the coverts, which are sometimes narrowly tipped with white. Lower parts white and rufous, in transverse bars, the shafts of the feathers black, and the rufous bars usually connected along the middle portion of the feathers; tibiæ more deeply colored, the rufous usually predominating; crissum immaculate white. Lining of the wing white, irregularly spotted with deep rufous; inner webs of the primaries with transverse bands of dusky and white anterior to their emargination and silvery gray terminally, the dusky bands about seven in number on the longest quill, the two colors nearly equal in width. *Male.* Slate of the upper parts of a fine bluish cast; nape and sides of the head bluish ashy, the sides of the breast usually tinged with the same. Wing, 8.85–9.40; tail, 7.80–8.30; culmen, .60–.68; tarsus, 2.30–2.60; middle toe, 1.45–1.55. (Eight specimens.) *Female.* Slate of the upper parts of a brownish cast, nape and sides of the head dull rusty brownish, the sides of the breast without ashy tinge. Wing, 10.00–10.80; tail, 9.00–9.40; culmen, .70–.80; tarsus, 2.65–2.85; middle toe, 1.60–1.85. (Five specimens.) (*Colors in life.* Terminal half of bill deep black, basal half pale blue; cere greenish yellow; iris deep orange-red; tarsi and toes deep lemon-yellow; claws deep black.*)

Young. Above grayish brown, the feathers more or less bordered with rusty; the scapulars and upper tail-coverts with concealed white spots; the occiput blackish, with the bases of the feathers white, and the pileum and nape streaked with rusty. Tail grayish brown, tipped with whitish, and crossed by four bands of brownish black or dusky. Lower parts white, longitudinally striped with clear dusky brown, the shafts black. (*Colors in life.* Iris varying from greenish white to chrome-yellow; bill blackish terminally, pale blue basally; tarsi and toes varying from very pale greenish yellow to lemon-yellow; claws slate-black.)

*Fresh colors of an adult male killed January 16, 1867, at Mount Carmel, Illinois. Length, 17 inches; extent, 30.50 inches.

The extent of individual variation in this species, though very considerable, is limited by the terms of the above diagnosis.

This bold marauder is a common resident in all wooded portions of the State. Its habits and more prominent characteristics cannot be better described than in the following, by "J. M. W." in the *Ornithologist* and *Oölogist* for December, 1881, pp. 73, 74.

"Before transcribing my notes on the breeding habits of the vivacious little Sharp-shinned Hawk, we must pay our compliments to its larger congener. Indeed through the season it forces itself upon our notice in so many ways, and with such persistence, that we are obliged to respect its prior claims. When we go into the leafless woods, during the first week in April, for our earliest set of Buteos, the Cooper's Hawks are already paired and apparently ready to begin housekeeping. They feign alarm at our approach to the old haunts, and following us, scold us well as we go from nest to nest. But as usual with the sex when house-hunting, the females are capricious and not easily suited. The old home, though in good repair, is perhaps in a neighborhood where callers are too free, and ample time must be taken to choose a new tenement.

"Then again about the twenty-fifth of April, when we once more climb to our Buteos, hoping for a second clutch, we are surprised to find the first egg of a Cooper which has taken possession of this ready-furnished abode. The second week in May they are breeding commonly, and by the first of June they are so abundant here as to outnumber all the other Raptores. They will breed in old nests in the same low situations in hemlocks and young pines as the Sharp-shinned Hawk, but they frequent as well the tall deciduous woods, and I have taken eggs from dizzy heights on outlying prongs, away above the loftiest forks of the Buteos. Very rarely *A. cooperi* selects a new and unused site, but as a rule old nests are used, and often on a pile of rubbish in a crotch they will rear a very large superstructure. If the forks of the tree go up a little way without divergence, the pair will work for weeks and raise the nest three or four feet until it is bulkier than the home of any of our local *rapaciæ* except the Fishhawk. I know to-day where there are three such old Cooper's nests which are piled so high with brush that

standing on a level with the bottom of the nests it is difficult for a climber to reach inside. The males assist at intervals in bringing sticks, and unite with their mates in scolding any witness of their house-raising.

The fecundity of this Hawk, under the peculiar persuasion of the oölogist, is not so great as its small congener's, yet it will lay three clutches each year in as many nests, if the first and second sets are taken. Five eggs is the usual clutch, though I have seen four eggs incubated many times, and have taken an extreme clutch of six. The first egg laid is usually pale blue, the rest of the nest complement is lighter, and the eggs, as a whole, fade as incubation progresses. Two weeks are occupied in laying, and at the end of one week's incubation the eggs can be easily blown. Sets with markings are not rare; but the pigment is used sparingly, so as a rule a fair series of these eggs present few changes and are unattractive.

Coopers are the most deadly scourge in country farm-yards. While the Buteos give warning of their whereabouts by soaring far overhead for hours, and sometimes days, before dropping among the young poultry, the dreaded Accipiters, sailing very low, will suddenly start over a wall and be off with a chicken without notice. The old domestic cocks and Guinea-fowl will see a Buteo when but a speck in the sky, and on a too near approach to the earth of the common enemy sound an alarm which sends all the timid ones to cover. But even after repeated raids of the Cooper, his advance is so unheralded, and his dash so quick, that he gets off scot free, even though the farmer stands in his doorway with gun in hand."

Accipiter velox (Wils.)

SHARP-SHINNED HAWK.

Popular synonyms. Little Swift Hawk; Slate-colored Hawk; Bullet Hawk.

Falco fuscus GMEL. S. N. i, 1788, 280, (not of FABRICIUS, 1780).—NUTT. Man. i, 1833 87.
Accipiter fuscus BP. 1838.—CASS. in Baird's B. N. Am. 1858 18.—BAIRD, Cat. N. Am. B. 1859. No. 17.—COUES, Key, 1872, 212; Check List, 1874, 333; 2d ed. 1882, No. 494; B. N. W. 1874, 333.—RIDGW. Nom. N. Am. B. 1881, No. 432.

Astur fuscus AUD. B. Am. i. 1840, 100, pl. 25.
Nisus fuscus KAUP. 1850.—B. B. & R. Hist. N. Am. B. iii, 1874, 224.
Falco velox WILS. Am. Orn. v, 1812, 116, pl. 45, fig. 1.
Falco pennsylvanicus WILS. Am. Orn. vi, 1812, i, pl. 46, fig. 1.

HAB. The whole of North America; south, in winter, to Panama and the Bahamas; breeding nearly throughout the United States and northward.

SP. CHAR. Wing, 6.35–8.80; tail, 5.50–8.20; culmen, .35–.60; tarsus, 1.85–2.30; middle toe, 1.10–1.55. Fourth and fifth quills longest, third nearly equal to sixth, outer five with inner webs emarginated. Tail even or slightly emarginated.

Adult male. Above plumbeous, becoming gradually darker on the pileum, the feathers with blackish shaft-streaks. Tail rather lighter, usually browner, (sometimes with a narrow white terminal margin), crossed with four dusky bands. Occipital feathers pure white beneath the surface, and scapulars with large concealed roundish spots of the same. Lower parts mixed white and rufous, in transverse spots or bars, the rufous bars usually connected along the middle of the feather, the shaft being conspicuously darker. Throat and cheeks streaked but not barred. Crissum and anal region immaculate pure white. Tibiæ usually with the rufous predominating, rarely uniform rufous. Wing, 6.70–7.10; tail, 5.80–6.10; culmen, .38–.43; tarsus, 1.90–2.05; middle toe, 1.10–1.25.

Adult female. Similar to the male, but less bluish above, and the white of the lower parts less pure. Wing, 7.80–8.80; tail, 6.60–8.20; culmen, .48–.60; tarsus, 2.00–2 25; middle toe, 1.30–1.55.*

Young male. Above dark sepia, the feathers bordered terminally with rusty, those of the nape widely edged with the same, or with fulvous whitish; feathers of the pileum similarly but more narrowly edged with the same. Tail brownish gray, crossed by four to five well-defined, continuous, narrow bands of blackish. Scapulars and upper tail coverts with concealed large spots of white, and occipital region white beneath the surface. Beneath, white, with or without an ochraceous tinge, the anal region and crissum immaculate, the throat streaked with dusky; the breast, abdomen, sides, and flanks with broad stripes of dilute sepia, with darker shaft-streaks, these stripes sometimes dilating on the sides into chain-like series of spots; tibiæ with elliptical or tear-shaped stripes, or variously shaped spots, of dilute sepia, on a white or pale rusty ground. Wing, 6.35–6.95; tail, 5.50–6.30; culmen, .35–.40; tarsus, 1.85–2.05; middle toe, 1.05–1.25.

Young female. Exactly like the young male in markings and colors. Wing, 7.75–8.60; tail, 6.50–7.60; culmen, .45–.50; tarsus, 2.05–2.30; middle toe, 1.30–1.50.

Dr. Brewer gives us the following biography of this species, in *History of North American Birds*, Vol. III., pp. 227–229:

"Mr. Audubon regarded it as the very miniature of the Goshawk, in its irregular, swift, vigorous, varied, and yet often undecided, manner of flight, and on occasion greatly protracted. When in search of its prey, it is said to pass over the country, now at a moderate height, now close over the land, and with a surprising swiftness. It advances by sudden dashes, and pounces upon the

*Fresh colors of an adult female (No. 8,450, U. S. Nat. Mus.) shot at Mount Carmel, Ill., October 22, 1869. Terminal two thirds of bill deep black; basal portion pale blue; interior of mouth bright cobalt-blue, more purplish far back; cere, rictus, eyelids and naked "eye-brow" oil-green; iris deep orange-red; tarsi and toes brownish lemon-yellow; claws jet-black. Total length, 13 inches; extent, 34 inches.

object of its pursuit so suddenly as to render hopeless any attempt to escape. It has frequently been known to seize and kill a bird so large that it was unable to carry it, and had to drop to the ground.

"In nearly every instance the nest of this Hawk has been constructed in trees. It is usually large in proportion to the size of the bird, and its materials are somewhat elaborately put together; it is composed chiefly of large sticks and twigs, and the whole platform is covered with a thin lining of dry leaves, mosses, grass, etc. Mr. John Krider, of Philadelphia, found a nest in New Jersey, in the vicinity of that city, which was built on the edge of a high rock."

Subgenus **Astur** Lacépède.

Astur Lacép. Menag. Mus. Hist. Nat. 1815, 505. Type, *Falco palumbarius* Linn.

Notwithstanding the vast difference in size between the typical species of *Astur* and those of *Accipiter*, the details of structure are essentially the same, the greatest differences between them being very nearly bridged over by species of intermediate size and structure.

North America possesses a single species of the subgenus *Astur*, and this is a near relative of *A. palumbarius*, but sufficiently distinct, having the plumage of the lower parts much more delicately penciled and the color of the upper parts more bluish than in the European species.

Accipiter atricapillus (Wils.)

AMERICAN GOSHAWK.

Popular synonyms. Blue Hen Hawk or Chicken Hawk.

Falco atricapillus Wils. Am. Orn. ii, 1808, 284, pl. 52, fig. 3.
Astur atricapillus Bp. 1830.—Nutt. Man. 1833, 85.—Cass. in Baird's B. N. Am. 1858, 15.—Baird, Cat. N. Am. B. 1859, No. 14.—Coues, Key, 1872, 212; Check List, 1874, No. 340; 2d ed. 1882, No. 496; B. N. W. 1874, 338.—Ridgw. Nom. N. Am. B. 1881, No. 433.
Astur palumbarius var. *atricapillus* B. B. & R. Hist. N. Am. B. iii, 1874, 237.
Falco palumbarius "Linn."—Aud. B. Am. pl. 141; Orn. Biog. ii, 1834, 241 (*nec* Linn.).
Astur palumbarius Aud. Synop. 1839, 18; B. Am. i, 1840, 95, pl. 23.
Accipiter (Astur) palumbarius Sw. & Rich. F. B.-A. ii, 1831, 39, pl. 26.

Astur atricapillus var. *striatulus* (part) RIDGW. in B. B. & R. Hist. N. Am. B. iii, 1874, 238, 239, 240 (adult).

HAB. Northern North America (except coast of Alaska, east and south of Kodiak); south in winter across greater part of the United States (Pacific coast excepted), breeding chiefly north of the United States. (Represented in the Pacific province by *A. atricapillus striatulus* RIDGW.)

SP. CHAR. *Adult male* (No. 44,940, Boston, Mass.: E. A. Samuels). Above continuous bluish slate, shafts of the feathers inconspicuously black. Tail darker and less bluish, tipped with white (about .25 of an inch wide) and crossed by five broad, faintly defined bars of blackish, these most distinct on inner webs; the first concealed by the upper coverts, the second partially so; the last, or subterminal one, which is about twice as broad as the rest, measuring about one inch in width. Primaries darker than the tail (but not approaching black). Forehead, crown, occiput, and ear-coverts pure plumbeous black, feathers snow-white beneath the surface, much exposed on the occiput; a broad conspicuous supra-auricular stripe originating above the posterior angle of the eye, running back over the ear-coverts to the occiput, pure white, with fine streaks of black; lores and cheeks grayish white. Lower parts white; the whole surface (except throat and lower tail-coverts) covered with numerous narrow transverse bars of slate; on the breast these are much broken and irregular, forming fine transverse zigzags; posteriorly they are more regular, and about .10 of an inch wide, the white a very little more. Chin, throat, and cheeks without transverse bars, but with very sharp shaft-lines of black; on breast, sides, and abdomen, a median longitudinal broad streak of slate on each feather, the shaft black; on the tibiæ, where the transverse bars are narrower and more regular, the shaft-streaks are also finer; anal region finely barred; lower tail-coverts immaculate pure white. Lining of the wing barred more coarsely and irregularly than the breast; under surface of primaries with white prevailing, this growing more silvery toward the ends; longest (fourth) with six oblique transverse patches of slate, the outlines of which are much broken. Wing formula, 4,5,3-6-2, 1=10. Wing, 13.00; tail, 9.50; tarsus, 3.70; naked portion, 1.35; middle toe, 2.00; inner, 1.21; outer, 1.37; posterior, 1.00.

Adult female (No. 12.239, Brooklyn, N. Y.: J. Ackhurst). Almost precisely similar to the male. Slate above less bluish; bands on tail more distinct, five dark ones (about .75 of an inch in width) across the brownish slate; indistinct lighter bands indicated on outer webs of primaries, corresponding with those on inner webs; lores more grayish than in male; bars beneath more regular; longitudinal streaks blacker and more sharply defined. Wing, 14.25; tail, 11.25; tarsus, 1.60-2.20; middle toe, 1.95; inner, 1.40; outer, 1.45; posterior, 1.30.

Young male (No. 26,920, Nova Scotia, June: J. G. Winton). Plumage very much variegated. Head above, nape, and anterior portion of the back, ochraceous white, each feather with a median stripe of brownish black, these becoming more tear-shaped on the nape. Scapulars, back, wing-coverts, rump, and upper tail-coverts umber-brown; the feathers with lighter edges, and with large, more or less concealed spots of white, these largest on the scapulars, where they occupy the basal and middle thirds of the feathers, a band of brown narrower than the subterminal one separating the two areas; upper tail-coverts similarly marked, but white edges broader, forming conspicuous terminal crescentic bars. Tail cinereous umber, with five conspicuous bands of blackish brown, the last of which is subterminal, and broader than the rest; tip of tail like the pale bands; the bands are most sharply defined on the inner webs, being followed along the edges by the white of the edge, which, frequently extending along the margin of the back, crosses to the shaft, and is sometimes even apparent on the outer web; the lateral feather has the inner web almost entirely white, this, however, more or less finely mottled with grayish, the mottling becoming more dense toward the end of the feather; the bands also cross more obliquely than on the middle feathers. Secondaries grayish brown, with five indistinct, but quite apparent, dark bands; primaries marked as in the adult,

but much lighter. Beneath pure white, all the feathers, including lower tail-coverts, with sharp, central, longitudinal streaks of clear dark brown, the shafts of the feathers black; on the sides and tibiæ these streaks are expanded into a more acuminate, elliptical form; the crissum only is immaculate, although the throat is only very sparsely streaked; on the ear-coverts the streaks are very fine and numerous, but uniformly distributed.

Young female, second year? (No. 26,921, Nova Scotia: W. G. Winton). Head above, nape, rump, and upper tail-coverts, with a deep ochraceous tinge; the character of markings, however, as in the male. Bands on the tail more sharply defined, the narrow white bar separating the black from the grayish bands more continuous and conspicuous; lateral feathers more mottled; grayish tip of tail passing terminally into white. Beneath with a faint ochraceous wash, this most apparent on the lining of the wings and tibiæ; streaks as in the male, but rather more numerous, the throat thickly streaked.

Young male, first year (No. 49,662, Calais, Me.: G. A. Boardman). Differs from No. 26,921 as follows: On the wings and upper tail-coverts the yellowish white spots are less concealed, or, in fact, this forms the ground-color; secondary coverts ochraceous white, with two very distinct transverse spots of dark brown, rather narrower than the white spaces; tips of feathers broadly white; secondaries grayish brown, tipped with white, more mottled with the same toward bases, and crossed by five bands of dark brown, the first two of which are concealed by the coverts, the last quite a distance from the end of the feathers; upper tail-coverts white, mottled on inner webs with brown, each with two transverse broad bars, and a sub-terminal cordate spot of dark brown, the last not touching the edge of the feather, and the anterior bars both concealed by the overlaying feather. Tail grayish brown, tipped with white, and with six bands of blackish brown; these bordered with white, as in the older stage. Markings beneath as in the older stage, but those on the sides more cordate. Wing formula, 4, 5, 3-6-7-2-8-9, 1, 10. Wing, 14.00; tail, 11.50.

Some of the examples upon which the supposed western race "*A. atricapillus* var. *striatulus*," of "History of North American Birds" (Vol. III., pp. 238–240) was based, prove to be only very old birds of the true *A. atricapillus*. They differ from the ordinary plumage of the adult in the much finer pencilings of the plumage of the lower parts, and more bluish cast to the upper parts.

This daring and powerful hawk is by no means common in Illinois, where it makes its appearance only in winter. Mr. Nelson (page 119 of his list) says of it as follows:

"Formerly a common winter resident; now very rare. Dr. A. L. Marcy, of Evanston, found them quite plentiful during the winter of 1870–71, and obtained specimens. The only time I ever saw the bird alive, was the 3d of May, 1876, at Waukegan, when a fine adult specimen passed slowly overhead and disappeared toward the north."

Genus **ASTURINA** Vieillot.

Asturina Vieill. Analyse, 1816, 24. Type *Falco nitidus* Lath.

Sp. Char. Somewhat similar to *Astur*, but of much heavier and more robust build; tarsi longer and stouter, tail shorter and less rounded, wings longer, etc. Bill more elongated than in *Astur*, the cere longer, and the festoon on the commissure more developed; nostril oval, horizontal. Wings rather short, but less concave beneath than in

Astur; third to fourth quill longest; first shorter than eighth or ninth; four outer quills with their inner webs sinuated; tail considerably shorter than the wing, slightly emarginated, the lateral pair of feathers longest. Feet large and robust, when outstretched reaching almost to the end of the tail; tarsi very robust compared to the toes, about one and a half times as long as the middle toe, the frontal and posterior rows of transverse scutellæ very distinct and regular; outer toe longer than inner; claws strong, well curved, but not very acute. Sexes alike in color; old and young plumages very different.

This genus is peculiar to tropical America, and contains but two species, the *A. nitida* (LATH.) of South America and *A. plagiata* (LICHT.) of Middle America.

This genus *Asturina* is closely related to *Leucopternis* KAUP, but differs as follows:

Asturina. First quill longer than tenth. Tail even or emarginate, the lateral pair of rectrices usually longest. Nostril decidedly horizontal. Young and adult exceedingly different in plumage.

Leucopternis. First quill shorter than tenth. Tail slightly rounded, the lateral pair of feathers shortest. Nostril nearly circular, rather vertical than horizontal. Young and adult scarcely differing in plumage.

Asturina nitida plagiata (Licht.)

MEXICAN GOSHAWK.

Buteo plagiatus LICHT. Nomencl. 1854. 3.

Asturina plagiata SCHLEG. Mus. P. B. Asturinæ, 1862, 1.—SCL. & SALV. Ex. Orn. 1869, 179, pl. 90.—COUES, Key, 1872, 218; Check List, 1874, No. 358; 2d ed. 1882, No. 527 ("*plagata*")

Asturina nitida var. *plagiata* RIDGW. 1873.—B. B. & R. Hist. N. Am. B. iii, 1874, 246.

Asturina nitida plagiata RIDGW. Nom. N. Am. B. 1881, No. 445.

Asturina nitida CASS. in Baird's B. N. Am. 1858, 35 (not *Falco nitidus* LATH.).—BAIRD, Cat. N. Am. B. 1859, No. 33.

HAB. Whole of Middle America, south to Panama, north to southwestern border of United States; accidental (?) in southern Illinois (Richland Co., *cf.* RIDGW. Am. Nat. July 1872, p. 430).

SP. CHAR. *Adult male* (No. 51,343, Mazatlan, Mexico: Ferd. Bischoff). Above deep (rather dark) cinereous, becoming paler and finer on the head above, where the feathers have the shafts (finely) black; wings with indistinct lighter bars; rump almost black. Upper tail-coverts immaculate pure white. Tail pure black, tipped with pale grayish brown (this passing terminally into white); about 1½ inches from the tip is a continuous band of white, half an inch in width; and a little over an inch anterior to this is another narrower and less perfect one. Primaries approaching black at ends; the tips broadly edged with dull white, as also the ends of secondaries. Head uniform fine delicate ashy, becoming white on chin and throat, and approaching the same on the forehead; shafts of feathers on head above, and neck, black; neck with indistinct paler transverse bars, these most distinct on jugulum; the breast, abdomen, sides, flanks, axillars, and tibiæ are regularly barred transversely with cinereous and pure white, the bars of each about equal, the white, however, gradually increasing, and the ashy bars narrowing posteriorly, the tibiæ being finely barred; lower tail-coverts immaculate pure white. Lining of the wing white, with very sparse, faint, transverse zigzag bars next the axillars and on larger coverts; under surface of primaries white anterior to their emargination, beyond which they are more silvery, leaving about an inch of the terminal portion black, the end of each, however, ashy; outer two quills crossed by narrow bars of ashy, the rest with indications of the same, near the shaft. Fourth quill longest; third scarcely shorter; second shorter than fifth; first intermediate between eighth and ninth. "Length 16.00; extent, 38.00." Wing, 10.50; tail, 7.00; tarsus, 2.60; middle toe, 1.50.

Adult female (No. 34,002, Mazatlan, June: Colonel Grayson). Cinereous, above darker, the fasciæ of the wings hardly observable; front and throat scarcely whitish; rump almost pure black; second tail-band much broken and restricted. Ashy prevailing on the jugulum, ashy bars beneath rather broader. Wings, 11.00; tail, 7.50; tarsus, 2.80; middle toe, 1.70.

Young male (No. 35,060, Rio de Coahuyana, W. Mexico, October: J. Xantus). Above, from bill to upper tail-coverts, dark bistre-brown, almost black; feathers of the head and neck edged laterally with pinkish ochraceous, or sulphuret-of-manganese color; scapulars with nearly whole outer webs of this color, they being blackish only along edges and at ends; middle wing-coverts spotted with the same. Secondaries and primaries faintly tipped with whitish; secondaries with indications of darker bands, and outer webs of primaries with still more obscure ones: upper tail-coverts white, with sagittate specks of black, one or two on each. Tail umber-brown (considerably lighter than the wings), tipped with pinkish ash (this passing terminally into dull white) and crossed with six or seven bands of black (these becoming gradually, but very considerably, narrower toward the base). Beneath white, with vinaceous tinge (this deepest laterally); breast, abdomen, and sides with large tear-shaped or cuneate spots of black; tibiæ with numerous transverse bars of the same.

Young female. Similar to last, but the brown lighter, and more approaching umber.

In both sexes the iris is brown, bill and claws black, or bluish black; cere, rictus, legs, and feet yellow.

Four other adults, with sex not indicated on labels, measure as follows:

Wing, 10.00–11.70; tail, 6.80–8.00; culmen, .90–.95; tarsus, 2.65–2.80; middle toe, 1.50–1.65.

A specimen of this tropical species was seen by the writer on Fox Prairie, in Richland Co., on the 19th of August, 1871.* It several times came so near that its peculiar markings could be seen with perfect distinctness, and the writer having previously handled many stuffed specimens there cannot be the slightest doubt as to the correctness of its identification.

*See *American Naturalist*, July, 1872, p. 430, and April, 1873, p. 201.

GENUS BUTEO CUVIER.

Buteo CUV. Lec. Anat. Comp. i, 1800, tabl. ois. Type, *Falco buteo* LINN.
Craxirex GOULD, Voy. Beag. Birds, 1841, 22. Type, *Polyborus galapagoensis* GOULD.
Tachytriorchis KAUP, Class. Saug. Vög. 1844, 143. Type, *Falco pterocles* TEMM., = *Buteo albicaudatus* VIEILL.
Poecilopternis KAUP. Isis, 1849, 329. Type, *Falco pennsylvanicus* WILS.
Buteola BONAP. Compt. Rend. xli, 1855, 651. Type, *Buteo brachyurus* VIEILL.

GEN. CHAR. Form robust and heavy, the wings long and rather pointed, the tail moderate and rounded, the bill and feet strong. Bill intermediate between that of *Astur* and that of *Parabuteo*. Wing long and rather pointed, the third to fifth quill longest, the first shorter than eighth; three or four with inner webs emarginated. Tail moderate, slightly rounded.

A. Four outer primaries with inner webs emarginated.

a. Tarsus more than twice as long as the middle toe.

1. **B. lineatus.** Tail always dusky, crossed by white or buffy narrow bands; outer webs of primaries, anterior to their emarginations, more or less spotted with white or ochraceous. *Adult.* Lower parts rufous (varying in intensity), more or less barred or transversely spotted with white (breast sometimes nearly uniform rufous). Tail and primaries slate-black, the former barred, the latter spotted on outer webs with pure white; lesser wing-coverts dark rufous or chestnut. *Young.* Lower parts dull whitish or buffy, longitudinally striped with dusky. Primaries and tail brownish dusky, the former crossed by narrow bands of pale grayish brown, buffy, or dull whitish, the latter spotted towards base with the same. *Male.* Wing, 12.90–13.50; tail, 7.70–9.70; tarsus, 2.70–3.25. *Female.* Wing, 13.35–14.25; tail, 9.00–10.00; tarsus, 3.10–3.20.

b. Tarsus less than twice as long as middle toe. Form decidedly more robust.

2. **B. borealis.** Tail rufous in adult, brownish gray banded with black, in young; outer webs of primaries without light spotting. *Adult.* Lower parts varying from entirely white, with a few dusky markings on abdomen and flanks, to dusky, with or without a rufous breast-patch. Tail rufous, usually with a single subterminal black bar, sometimes with indications of other bars, rarely without any bar. *Young.* Lower parts white, more or less varied with dusky, especially across abdomen, or almost wholly dusky (in some western specimens). Tail brownish gray, crossed by about 9 narrow bands of blackish. *Male.* Wing, 13.50–16.50; tail, 8.50–10.00; tarsus, 2.40–3.20. *Female.* Wing, 15.25–17.75; tail, 9.50–10.50; tarsus, 3.15–3.40.

3. **B. harlani.** Similar in form to *B. borealis*, but lateral toes nearly equal, and tibial plumes better developed, reaching to or beyond the base of the toes. Prevailing color blackish, the bases of the feathers pure white. *Adult.* Tail confusedly mottled with grayish, dusky and white, in variable relative amount, often mixed with rufous, and crossed by a subterminal bar or narrow band of dusky. *Young.* Tail crossed by 7–9 bands of grayish brown and dusky, the two colors about equal in width. *Male.* Wing, 14.25–15.00; tail, 8.80–10.00; tarsus, 2.75–3.25. *Female.* Wing, 15.75–16.20; tail, 9.10–10.00; tarsus, 2.90–3.50.

B. Only three outer primaries with inner webs emarginated.

5. **B. swainsoni.** Size large (wing more than 12 inches), the tips of the closed wings reaching nearly or quite to the end of the tail. Tail (of both adults and young) grayish brown (sometimes with a hoary cast), crossed by 9 or more narrow dusky bands, these less distinct basally. Upper parts nearly uniform dusky brown. *Normal plumage.* Lower parts whitish (or light colored), with a distinctly defined breast-patch, rufous in the male, brown in the female. *Melanistic plumage.* Lower parts entirely dusky, or with dusky prevailing, with or without admixture of rufous. *Young.* Above brownish black, with ochraceous edgings to feathers; beneath fine ochraceous, more or less marked with tear-shaped spots of

brownish black. (Palest-colored specimens nearly or quite free from spots beneath; melanistic examples with dusky prevailing.) *Male:* Wing, 13.70–15.25; tail, 7.00–9.00; tarsus, 2.10–2.65. *Female:* Wing, 14.75–16.50; tail, 8.80–9.00; tarsus, 2.50–2.70.

5. **B. latissimus.** Size small (wing less than 12 inches), the tips of the closed wings reaching only to the middle of the tail. *Adult:* Tail dusky, crossed by 2–4 broad bands of light brownish gray or brownish white, and narrowly tipped with whitish. Upper parts nearly uniform dusky brown, darker on the back; lower parts dull rufous brown varied by white spotting, the latter color prevailing posteriorly. *Young:* Tail grayish brown, crossed by about 5–7 narrow bands of dusky and tipped with whitish. Side of head and entire lower parts white or pale buff, relieved by a more or less distinct dusky "mustache;" a dusky streak down middle of throat, and various longitudinal markings of the same color on breast, sides, etc. *Male:* Wing, 9.85–10.70; tail, 6.50–7.00; tarsus, 2.15–2.80. *Female:* Wing, 11.00–11.40; tail, 7.00–8.00; tarsus, 2.20–2.80.

Buteo borealis (Gmel.)

RED-TAILED HAWK.

a. borealis. Eastern Red-tailed Hawk.

Popular synonyms. Chicken Hawk; White-breasted Chicken Hawk; Common Chicken Hawk or Hen Hawk.

Falco borealis GMEL. S. N. i, 1788, 266.—WILS. Am. Orn. i, 1808, pl. 52, fig. 1.—AUD. B. Am. i, 1831, pl. 51; Orn. Biog. i, 1831, 265.—NUTT. Man. ed. 2, i, 1840, 102.

Buteo borealis VIEILL. 1816.—NUTT. Man. i, 1832, 122.—AUD. Synop. 1839, 6; B. Am. i, 1840, 32, pl. 7.—CASS. in Baird's B. N. Am. 1858, 25.—BAIRD, Cat. N. Am. B. 1859. No. 23.—COUES, Key, 1872, 216; Check List, 1874, No. 351; 2d ed. 1882, No. 516; B. N. W. 1874, 352.—RIDGW. Nom. N. Am. B. 1881, No. 436.

Buteo borealis var. *borealis* B. B. & R. Hist. N. Am. B. iii, 1874, 282.

Falco leverianus GMEL. S. N. i, 1788, 266 (=young).—WILS. Am. Orn. i, 1808, pl. 52, fig. 2.—AUD. Orn. Biog. i, 1831, 265.

HAB. Eastern North America to and including the Mississippi Valley; north to the Fur Countries, south through eastern Mexico to Guatemala.

b. calurus. Western Red-tailed Hawk.

Popular synonym. Black Red-tail.

Buteo calurus CASS. Proc. Phil. Acad. vii, 1855 281; in Baird's B. N. Am. 1858, 14; ib. ed. 1860, pl. 14.—BAIRD, Cat. N. Am. B. 1859, No. 20.

Buteo borealis var. *calurus* RIDGW. 1873.—B. B. & R. Hist. N. Am. B. iii, 1874, 286.

Buteo borealis b. *calurus* COUES, B. N. W. 1874, 286.

Buteo borealis calurus RIDGW. Nom. N. Am. B. 1881, No. 436*b*.—COUES, 2d Check List, 1882, No. 517.

Buteo montanus "NUTT." CASS. in Baird's B. N. Am. 1858, 26 (*nec.* NUTT.).—BAIRD, Cat. N. Am. B. 1859, No. 24.

HAB. Western North America, from Rocky Mountains to the Pacific; north to Sitka, Alaska; south to southern Mexico.

c. krideri. Krider's Red-tailed Hawk.

Popular synonyms. White Red-tailed Hawk; White Hen Hawk or Chicken Hawk.

Buteo borealis var. *krideri* HOOPES, Proc. Phil. Acad. 1873, 283, pl. 5 (= young).—B. B. & R. Hist. N. Am. B. iii, 1874, 284.—COUES, Check List, 1874, No. 351*c*.

Buteo borealis d. *krideri* COUES, B. N. W. 1874, 353.

Buteo borealis krideri RIDGW. Nom. N. Am. B. 1881, No. 436.—COUES, 2d Check List, 1882, No. 519.

HAB. Eastern border of the Great Plains, from Minnesota to central Texas.

SP. CHAR. Third to fifth quill longest, the first always shorter than seventh (sometime shortest); four outer quills with inner webs distinctly emarginated. Tarsus less than twice as long as middle toe. *Adult.* Tail rufous, paler (sometimes whitish) at tip, and usually, crossed by a subterminal narrow band of black, often with more or less distinct indications of other narrow bars. Upper parts blackish brown (sometimes much mixed with white), nearly uniform on the back, elsewhere broken by more or less of paler transverse barring and spotting. Occipital feathers pure white at the base, but feathers of nape edged with dull rufous. Wings with indistinct lighter grayish brown bands, the tips of the remiges distinctly paler. Lower parts varying from nearly pure white, with few dark spots across the abdomen, to almost uniform blackish brown. Under surface of primaries plain white anterior to their emarginations. *Young.* Tail grayish brown, crossed by 9 or 10 narrow but usually sharply defined bands of blackish; colors otherwise much as in the adults but with less rufous.

The above characters cover the extreme variations in the plumage of this species that have come under my notice. The species varies not only to a great extent individually, but also geographically, a peculiar style of plumage prevailing in separate geographical areas of the country. The following geographical races are fairly well defined:

A. Never with dusky or rufous prevailing on lower parts; tail of adult usually with only one continuous dusky bar, sometimes with none.

α. **borealis.** Upper parts with dark brownish largely prevailing; abdomen and flank with conspicuous dusky spots. Tail deep rufous, usually with a distinct subterminal bar of black.

β. **krideri.** Upper parts with much white spotting; lower parts almost wholly white, with little or no dark spotting on abdomen and flanks. Tail light rufous, usually without a subterminal bar.

B. Frequently with rufous or dusky prevailing on lower parts. Tail of adult frequently with indications of numerous bars.

γ. **calurus.** Rarely but little darker than *borealis*; usually much darker, and not unfrequently almost uniform blackish brown.

a: borealis.

SP. CHAR. *Adult.* Upper parts rich blackish brown, approaching black on the back; scapulars and middle wing coverts edged and barred beneath the surface with dull white, and tinged along edges with ochraceous. Wings generally of a paler shade than the back; secondaries fading into nearly white at tips, and, with the greater coverts, obscurely barred with darker; primaries nearly black, tips edged with pale brown, this passing into whitish. Rump uniform blackish brown, the feathers obscurely bordered with rusty. Upper tail-coverts ochraceous white, nearly pure terminally, and with about two distinct transverse bars of deep rufous. Tail rich uniform lateritious rufous, passing narrowly into white at the tip, and about an inch (or less) from the end crossed by a narrow band of black. Head and neck with the feathers medially blackish brown, the edges rusty rufous, causing a streaked appearance; the rufous prevailing on the sides of the occiput, ear-coverts, and neck. The blackish almost uniform on the forehead and on the cheeks, over which it forms a broad "mustache"; lores and sides of frontlet whitish. Throat white, with broad stripes of pure slaty brown; lower parts in general ochraceous

white; tibiæ and lower tail-coverts immaculate; across the abdomen and flanks (immediately in front of the tibiæ) is a broad interrupted belt of longitudinal black blotches, those on the abdomen tear-shaped, on the flanks larger and more irregular, throwing off bars toward the edge of the feathers; whole pectoral area variegated only with a few shaft-streaks of black (these growing broader laterally), and sometimes washed with rusty. Lining of the wing ochraceous white, with sparse diamond-shaped spots of pale rufous, and shaft-streaks of darker; under surface of primaries white anterior to their emargination, beyond which they gradually deepen into black; the innermost ones are finely mottled with slaty, and with imperfect transverse bars of the same.

Male. Wing, 13.50–16.50; tail, 8.50–10.00; culmen, .95–1.08; tarsus, 1.40–3.20; middle toe, 1.60–1.70. Weight, 2½–3 lbs.

Female. Wing, 15.25–17.75; tail, 9.50–10.50; culmen, 1.00–1.15; tarsus, 3.15–3.40; middle toe, 1.70–1.80. Weight, 3–4 lbs.

Young (No. 28,154, Philadelphia, J. Krider). Above similar to the adult, but lacking entirely any rufous tinge, the scapulars and wing-coverts more variegated with whitish. Tail light grayish brown (very much lighter than the rump), tinged, especially basally, with rufous, narrowly tipped with white, and crossed with nine or ten narrow, curved bands of black; upper tail-coverts white, with broad bars of black. Head as in the adult, but the rufous wanting, leaving the streaks black and white; forehead more broadly white; chin and throat wholly white, the latter with a collar of dusky streaks across the lower part; whole pectoral region entirely immaculate, pure white; abdominal band as in the adult; tibiæ somewhat tinged with ochraceous, unvariegated.

In its typical form, *B. borealis* may usually be distinguished from the lighter-colored examples of *B. borealis calurus* by having the posterior lower parts (tibiæ and lower tail-coverts) free from transverse bars or other markings, and in the absence of transverse bars on the tail anterior to the usual subterminal one. These differences are by no means absolutely constant, however, since, while eastern specimens occasionally occur which have these parts more or less distinctly barred, western specimens with the same parts immaculate are sometimes found. Such, however, are in either case exceptional.

Young birds from the eastern side of the continent occasionally have the tibiæ more or less barred or spotted, but usually such markings, if present, are either small or faint in color compared with western specimens of corresponding age.

b. calurus.

Subsp. Char. *Adult.* Similar to *borealis*, but darker, or with more rufous and blackish in the plumage; tibiæ usually distinctly barred with rufous, or else nearly uniform rufous or dusky; throat usually with dusky prevailing, sometimes wholly of this color. Tail frequently with more or less distinct indications of numerous blackish bars. *In melanistic individuals*, which are not uncommon, the whole plumage nearly uniform sooty black or dark brown, the breast, however, usually paler, sometimes rufous or ferruginous. (Between this plumage and the lightest-colored individuals every possible intermediate coloration occurs.) *Young.* Much darker than the corresponding stage of *borealis*. In melanistic specimens, whole plumage blackish brown, varied only with fulvous edgings to the feathers and concealed white spotting; the tail grayish brown, with about nine broad black bars. In the lighter-colored individuals, the tibiæ with very distinct—usually heavy—transverse spots of dusky.

Adult male (five specimens from Nevada, collected by the author). Total length, 21.50-23.00 inches; extent, 49.00-53.00; weight, 2-3 pounds. Bill dull black terminally, light bluish basally; cere and rictus greenish yellow; iris deep hazel in some specimens, light yellow in others, in two specimens yellow on upper portion and brown below; legs and feet light yellow; claws black.

Adult female (five specimens from Nevada, collected by the author). Total length, 23.00-24.00 inches; extent, 54.00-57.00; weight, 3-4 pounds. Fresh colors as in the above-mentioned males. (Iris Naples yellow in one very black melanistic individual, deep hazel in a rufous-breasted melanistic specimen, and hazel in three light-colored examples.)*

The young bird of this western style is usually as different from that of the eastern as is the adult, and the essential differences are about the same,—i. e. darker colors, or a predominance, or rather, increase in size, of the dark markings. The numerous heavy transverse spots on the tibiæ constitute a marked feature of the average young *calurus*, as compared with the almost, or sometimes entirely, immaculate white of those in *borealis*.

c. krideri.

SUBSP. CHAR. *Adult.* Similar to *borealis*, but beneath continuous pure white, without rufous tinge, and without distinct spots across the abdomen, or lacking them entirely; above much lighter, the brown, light rufous, and white being about equal in amount. Upper tail-coverts immaculate white; tail pale rufous, the shafts pure white, and the webs mixed with white along their edges, its amount increasing toward the base; no trace of a dusky subterminal bar, or else only indicated by badly defined spots.

"*Young.* Differing from that of var. *borealis* in the immaculate, snowy white lower parts, nearly equal extent of the white and dusky on the upper parts, and whitish cast of the tail.

This fine bird, although far less numerous than the Red-shouldered Hawk (*B. lineatus*) is yet very common in most portions of the country. According to Mr. Horace A. King (in *Ornithologist and Oölogist*, Vol. IX., July, 1884, p. 81), "One of the commonest birds of prey to be found in northern Illinois, is the Red-tailed Hawk (*Buteo borealis*). A person will meet with them in all sorts of places, but they are most common in the vicinity of heavy timber. In driving through the country one will see them perched upon rail fences, trees by the way-side, sitting on the ground in stubble or pasture fields, or soaring over fields in search of their prey. When on one of his foraging expeditions, the Red-tail, on sighting his prey, will remain at the same place in the air by a continual flapping of the wings, when at the proper time he will dive swiftly and silently upon it."

* The color of the iris in this species (any race) is very inconstant. In the fully adult it may be either deep hazel, light hazel, light yellow, or partly brown and yellow; if the latter, the yellow usually occupies the upper portion of the iris. In immature birds the iris may be either clear light yellow, pale brown, or light grayish; the first, however, appears to be the usual color.

Two eggs of this species, unusually large and entirely free from markings, were obtained by the writer at Mount Carmel, on the 6th of March, 1867, and are now in the collection of the National Museum at Washington. The nest was on the summit of a tall black gum tree (*Nyssa sylvatica*), about ninety feet from the ground.

The claim of the western race of the Red-tailed Hawk rests on the capture of a single specimen "near Chicago in April, 1873," by Mr. C. H. Smith, as recorded by Mr. Nelson in his list, p. 119.

The occurrence in Illinois of the very strongly marked race known as Krider's Red-tailed Hawk, is verified by a specimen presented to the United States National Museum, by Mr. H. K. Coale, and obtained July 25, 1876, on the bank of the Des Plaines River, about 34 miles northwest of Chicago.

Buteo harlani (Aud.)

HARLAN'S HAWK.

Popular synonyms. Black Warrior; Harlan's Buzzard.

Falco harlani Aud. B. Am. i, 1831, pl. 36; Orn. Biog. i, 1831, 441.

Buteo harlani Bp. 1838.—Aud. Synop. 1839, 6; B. Am. i, 1840, 38, pl. 8.—Cass. in B. N. Am. 1858, 24 (part; not desc. of supposed young, which=*B. borealis calurus!*). —Baird, Cat. N. Am. B. 1859, No. 22.—Coues, Key, 1872, 216; Check List, 1874, No. 350; 2d ed. 1882, No. 515; B. N. W. 1874, 352.—B. B. & R. Hist. N. Am. B. iii, 1874, 292. —Ridgw. Nom. N. Am. B. 1881, No. 438.

Buteo cooperi Cass. Proc. Acad. Nat. Sci. Phil. 1856, 253.

Hab. Southern portion of Mississippi Valley, from Louisiana and Texas, to southern Illinois and eastern Kansas; New Mexico; Pennsylvania? eastern Mexico? Guatemala.

a. Light phase.

Adult (No. 8,525, Santa Clara, California, October, 1856: Dr. J. G. Cooper. Type of *B. cooperi* Cass). Head, neck, and whole lower parts white; feathers of the head and neck with median longitudinal streaks of black, the white prevailing on the occiput and superciliary region, the black predominating over the cheeks, forming a "mustache"; throat with fine lanceolate blackish streaks; sides of the breast with broader, more cuneate markings of the same; flanks with narrow, lanceolate stripes, these extending sparsely across the abdomen; tibiæ, and lower tail-coverts immaculate, the inner face of the former, however, with faint specks. Upper plumage in general dark plumbeous brown, inclining to black on the back; plumbeous clearest on primaries, which are uniformly of this color, the inner ones inclining to fine cinereous. Scapulars and wing-coverts spattered with white beneath the surface. Rump black; upper tail-coverts white tinged with rufous, and with irregular distant transverse bars of blackish. Tail with light rufous prevailing, but this broken up by longitudinal daubs and washes of cinereous, and darker mottlings running longitudinally on both webs; basally the ground color approaches white; tip white, and a distinct, but very irregular, subterminal band of black, into which the longitudinal mottlings melt; outer webs of lateral feathers entirely cinereous, and without the black band. Under side of the wing white with a large black space on the lining near the edge; under surface of primaries white anterior to their emargination, finely mottled with ashy, and with indistinct transverse bands terminally. Fourth quill longest; third shorter than fifth; second equal to sixth; first equal to tenth. Wing, 15.75; tail, 9.10; tarsus, 3.25; middle toe, 1.70.

Adult female? (No. 99,969, U. S. Nat. Mus., Gainesville, Texas: G. H. Ragsdale). Head and neck above white, each feather marked with a central guttate or acute-ovate spot of dusky brown, the whole under surface of the plumage, however, pure white. Back and scapulars mixed brownish gray, dusky brown, and white, in nearly equal proportion, the whole underlying portion of the feathers white; lesser and middle wing-coverts nearly uniform dusky brown, with a faint purplish gloss; greater coverts grayish brown, transversely spotted, or irregularly barred, with dusky, the concealed basal portion white; secondaries similar, but darker terminally, and narrowly tipped with white; primaries grayish brown, darker toward ends, indistinctly mottled with darker or lighter, the shorter quills with decidedly, though not abruptly, paler tips. Upper tail-coverts white, marked with an irregular subterminal blotch of dusky brown (continued, irregularly, along the shaft), the inner webs of some of them stained with ochraceous. Tail white, the outer webs of all the feathers confusedly mottled, chiefly near the edges, with brownish gray, these mottlings more coalesced, and also darker in color, near the end of the feathers, so as to suggest a poorly defined subterminal darker band; inner webs of all the rectrices, also the shafts, entirely white. Head, neck, and entire lower parts white, the first finely streaked laterally with dusky, the throat more broadly streaked, and from the rictus backward a broad stripe of dusky, formed of coalesced guttate streaks or spots, which at the lower part of the throat extend across, forming a narrow interrupted band; sides of jugulum marked with guttate spots of dusky brown; flanks and lower part of abdomen marked with guttate and lanceolate spots or streaks of very dark brown; front and inner sides of tibiæ sparsely and irregularly marked with clear grayish brown; whole breast, anal region, and crissum, immaculate. Lining of wing white, sparsely and irregularly spotted with dusky, thus forming a patch on the anterior under wing-coverts; under surface of primaries, anterior to their emargination, faintly, sparsely, and irregularly mottled with grayish. Wing, 16.25; tail, 10.00; culmen, 1.10; tarsus, 2.85, the bare portion in front 1.75; middle toe, 1.75.

b. **Dark phase.**

Adult male (Lawrence, Kansas. October, 1871: in collection of Kansas University). General color deep, almost carbonaceous, black, showing much exposed white on the head, neck, and breast, all the feathers of which are snowy white beneath the surface, the black being merely in the form of tear-shaped spots on the terminal portion of the feather; chin, lores, and front pure white; upper parts in general, the posterior lower parts, and the lining of the wing, with the black unbroken, but all the feathers—except the under wing-coverts—more or less spotted with white beneath the surface, on a grayish ground, these spots being usually arranged in pairs on each side of the shaft, on the flanks; tail-coverts, above and below, spotted irregularly with bright rufous, in nearly equal amount with the black and white. Alulæ, primary coverts, and primaries, with quadrate spots of plumbeous on their outer webs, forming transverse bands; under surface of primaries plumbeous gray except at ends, but much broken by coarse marbling of white, this prevailing anteriorly, where it is much confused, but posteriorly about equal with the grayish, and exhibiting a tendency to form quadrate spots. Tail, with the ground color white, but this nearly hidden on the upper surface by a longitudinal mottling of dark and light ashy, this growing more uniform terminally, where it becomes slightly suffused with reddish and crossed by a subterminal, broad, but broken and irregular, band of black, the tip again very narrowly grayish and reddish.

Wing formula, 4, 3, 5–2, 6; 1=10. Wing, 15.00; tail, 8.80; culmen, 1.00; tarsus, 2.75; middle toe, 1.50; lateral toes equal. Plumage of flanks, tibiæ, and crissum remarkably lengthened and lax, the latter reaching within two inches of the tip of the tail, and the tibial plumes reaching to the base of the toes.

Adult female (No. 6,851, Rio Grande, lat. 32°: Dr. T. C. Henry, U. S. A.). Whole plumage purplish black, or chocolate-black, with a purplish lustre; feathers everywhere pure white at bases, this exposed, however, only on the occiput, or where the feathers are disarranged. Forehead, lores, and chin white. Secondaries and primaries more brown than other portions, crossed by distinct bands of black,—about six on the secondaries. Whole

lining of the wing and upper tail-coverts, continuous, unvariegated black. Under surface of the primaries ashy white, more slaty terminally; ends with distinct, and other portions with indistinct, mottled bars of dusky. Tail ashy brown on outer webs, white on inner; both with a confused, rather longitudinal mottling of blackish; terminally, there is a broad, nearly continuous subterminal band indicated by blotches, these mixed very slightly with a rufous tinge. Primaries injured by shot, therefore proportions of the quills cannot be determined. Wing, 15.75; tail, 9.10; culmen, 1.00; tarsus 2.90; middle toe, 1.60; outer, 1.15; inner, 1.15.

Young male (Gainesville, Texas, Nov. 16, 1876: G. H. Ragsdale*). Prevailing color dark sooty brown, nearly black, the entire plumage white beneath the surface, showing wherever the feathers are disarranged. Throat white, with a few streaks of sooty brown; lores whitish. Scapulars and larger wing-coverts with large concealed bars and spots of white; feathers of the rump, upper tail-coverts, flanks, tibiæ and crissum with indistinct roundish spots of pale fulvous, pale grayish brown and dirty white, on the edges of the feathers, the continuity of the dusky ground-color being thus broken. Remiges grayish brown, with distinct bands of sooty black, with a purplish reflection, these bands averaging about .50 of an inch in width, .60-.75 apart; on the secondaries they are three in number, exclusive of those concealed by the greater coverts and the very indistinct terminal one; rectrices similar to the remiges, but the black bars nearly equal in width to the interspaces (both averaging about .45 of an inch in width), and seven in number on the intermediate (not counting the nearly obsolete basal one); on the inner webs of the intermediæ these bars are less regular, those toward the end of the feathers being decidedly zigzag and oblique; inner webs mottled with grayish next the shaft, white toward the edge, the bars narrower and more conspicuous than on the outer webs. Lining of the wing and axillars blackish dusky, irregularly spotted with white and pale fulvous; inner webs of primaries white anterior to their emarginations, this white relieved, however, by an irregular clouding and sprinkling of grayish.

Fourth quill longest; third and fifth, .35 of an inch shorter, and equal; second, 1.60; shorter than the fourth, and exceeding the sixth in length; first, 4.25 shorter than the fourth, and intermediate between the eighth and ninth.

Wing, 16.20; tail, 10.00; culmen, .98; tarsus, 3.50; middle toe, 1.70; outer toe decidedly longer than the inner.

The specimen last described calls to mind at first sight the young of *Buteo abbreviatus*, on account of the numerous white spots which show wherever the feathers are disarranged. It is, however, more spotted below, and the general cast of the plumage is decidedly more brownish; while the proportions are, of course, entirely different. From melanistic young specimens of *B. borealis*, it differs in the conspicuous white spotting alluded to, in the decidedly greater width and distinctness of the black band of the remiges and rectrices, as well as the more hoary cast of the interspaces between the latter—especially on the *intermediæ*.

"This species, though smaller than the Red-tail, to which he regarded it as allied, Audubon thought greatly superior to it in flight and daring. Its flight is described as rapid, greatly protracted, and so powerful as to enable it to seize the prey with apparent ease, or effect its escape from its stronger antagonist, the Red-tail,

* This specimen was, at last accounts, in the collection of Dr. R. M. W. Gibbs, of Kalamazoo, Mich. (Cf. *The Naturalist and Fancier*, Grand Rapids, Mich., Vol. I., No. 8, August, 1877.)

which pursued it on all occasions. It had been seen to pounce upon a fowl, kill it almost instantly, and afterward drag it along the ground several hundred yards. It was not seen to prey on hares or squirrels, but seemed to evince a marked preference for poultry, partridges, and the smaller species of wild duck. He saw none of the young, but was told that they appeared to be of a leaden gray color at a distance, and at the approach of winter became as dark as their parents." (*Hist. N. Am. B.* Vol. III., pp. 294, 295.)

A fine adult male of this rare species was taken by Mr. Chas. K. Worthen, near Warsaw, Hancock county, in March, 1879. "Two of them were seen at the time, flying up the Mississippi river, apparently following the flight of water-fowl which were then coming north in great numbers."

Buteo lineatus (Gmel.)

RED-SHOULDERED HAWK.

Popular synonyms. Hen Hawk; Chicken Hawk.

Falco lineatus Gmel. S. N. i, 1788, 268.—Wils. Am. Orn. i, 1808, pl. 53, fig. 3.—Aud. Orn. Biog. i, 1831, 296.

Buteo lineatus Jard. 1832.—Aud. Synop. 1839, 7.—Cass. in Baird's B. N. Am. 1858, 28.—Baird, Cat. N. Am. B. 1859. No. 25.—Coues, Key, 1872, 217; Check List, 1874, No. 352; 2d ed. 1882, No. 520; B. N. W. 1874. 354.—B. B. & R. Hist. N. Am. B. iii, 1874, 275 (var. *lineatus*).—Ridgw. Nom. N. Am. B. 1881, No. 439.

Falco buteoides Nutt. Man. i, 1832, 100.

Hab. Eastern North America, from the British Provinces to Florida, and west to the Great Plains; Texas and eastern Mexico to Orizaba. (Represented in California and western Mexico by *B. lineatus elegans*.) Accidental in Scotland.

Sp. Char. *Adult male* (No. 32,500, Washington, D. C., January). Head, neck, and interscapulars deep rufous (above becoming darker posteriorly), each feather with a median stripe of blackish brown. Throat and cheeks almost destitute of rufous tinge, the ground being dull white,—the dusky forming an indistinct "mustache," and an imperfect, obsolete collar (formed by confluent, or suffused streaks) across the throat. Breast, sides, abdomen, and tibiæ rather light rufous, becoming paler posteriorly; breast with shaft-streaks of blackish; the rufous of sides of breast almost unvaried; abdomen, sides, and middle of the breast, with transverse bars of ochraceous white; tibiæ uniform pale ochraceous; anal region and lower tail-coverts, immaculate white. Lesser wing-coverts chestnut rufous, feathers with black shaft streaks, these becoming larger posteriorly; scapulars and middle wing-coverts edged broadly with rufous, and indistinctly spotted on inner webs with white—this somewhat exposed; secondaries dark clear brown, tipped and crossed with two (exposed) bands of white; primaries black, fading at tips into dilute grayish brown, and with quadrate spots of white on outer webs. Rump uniform blackish brown; upper tail-coverts tipped and banded with black. Tail clear brownish black, crossed with six sharply defined narrow bands of white, the last of which is terminal, and the first two concealed by the upper coverts. Lining of the wing nearly uniform pale rufous, with very sparse, deeper rufous, somewhat transverse spots; under surface of primaries silvery white, crossed by broad bands, these where the white

is clearest being pale rufous, bordered with dusky, but as the white grows more silvery they darken into black; the longest (fourth) has eight of these spots, including the subterminal, very broad one. Fourth quill longest; fifth, just perceptibly shorter; third, a little shorter; second, considerably longer than sixth; first equal to ninth. Wing, 13.00; tail, 8.50; tarsus, 2.90; middle toe, 1.33.

Adult female (No. 11,991, Washington, D. C.: Dr. W. Wallace). Generally similar to the male, but rufous more extended, this tinging the outer webs of secondaries and primaries. On the under parts the rufous is rather deeper, and the tibiæ are strongly barred, and even the lower tail-coverts have obsolete spots of the same. Wing, 13.75; tail, 9.00; tarsus, 2.90; middle toe, 1.50.

Young male (No. 1,210). Ground color of head, neck, and under parts white; feathers of head and neck with median stripes of dark clear vandyke-brown, leaving a superciliary space, and the ear-coverts scarcely striped; a blackish suffusion over cheeks, forming a "mustache," and large longitudinal spot of the same on middle of throat; breast, abdomen, sides, and flanks, with rather sparse, irregularly sagittate spots of clear vandyke-brown, those on the sides of breast more longitudinal; tibiæ with a faint ochraceous tinge, and with sparse, small, and irregular specks of brown; lower tail-coverts with a very few distant isolated bars of the same. Upper parts generally, clear dark vandyke-brown; interscapulars and wing-coverts edged (most broadly beneath the surface) with pale rufous; middle wing-coverts with much white spotting on upper webs, partially exposed; wing-coverts generally, and scapulars, narrowly bordered with white; secondaries narrowly tipped with white, and crossed with about four (exposed) bands of paler grayish brown; primaries inclining to black; faintly margined at ends with whitish; outer webs anterior to the emargination, rufous white, with distant, narrow bars of blackish, these widening on inner quills; upper tail-coverts white with transverse spots of blackish. Tail dark vandyke-brown, narrowly tipped with white, and crossed with numerous narrow bands of pale grayish brown, these obsolete towards the base. Lining of the wing pale ochraceous, with a few irregularly cordate spots of dark brown toward edge of wing; under surface of primaries mostly white, the dusky bars not extending across the web, except on inner quills. Wing, 13.25; tail, 9.30; tarsus, 2.85; middle toe, 1.40.

Young female (No. 11,994. Washington, D. C., January: C. Drexler). Almost precisely similar; tibiæ unspotted; light bands of the tail more sharply defined basally, and pale mottled rufous, instead of pale ashy brown. Wing, 14.50; tail, 9.60; tarsus, 3.10; middle toe, 1.45.

This is decidedly the most numerous of the larger hawks in most portions of Illinois, especially in the timbered districts. It does not differ much in its habits from other species, except that it is a very noisy bird, its very loud but plaintive and not unmusical cry of *kee'–oe, kee'–oe, kee'–oe,* being frequently heard, especially during the breeding season, most often uttered as the bird sails in broad circles high over the tree-tops. The food of the Red-shouldered Hawk consists chiefly of frogs, reptiles, and field mice, but it occasionally, like others of its tribe, makes a descent upon the poultry-yard.

Buteo swainsoni Bonap.

SWAINSON'S HAWK.

Popular synonym. Brown Hawk.

Buteo vulgarus Sw. & Rich. F. B.-A. ii, 1831, 41, pl. 27 (male ad.).—Aud. B. Am. i, 1840, pl. 6.
Buteo swainsoni Bp. Comp. List, 1838, 3.—Cass. in Baird's B. N. Am. 1858, 19; ed. 1860, pl. 13 (female ad.).—Baird, Cat. N. Am. B. 1859, No. 18.—Coues, Key, 1872, 217; Check List, 1874, No. 354; 2d ed. 1882, No. 523; B. N. W. 1874, 355.—B. B. & R. Hist. N. Am. B. iii, 1874, 263.—Ridgw. Nom. N. Am. B. 1881, No. 442.
Buteo montanus Nutt. Man. ed. 1840, i, 112.
Buteo bairdii Hoy, Proc. Phil. Acad. 1853, 451 (= young).—Cass. Illustr. 1855, pl. 41; in Baird's B. N. Am. 1858, 21.—Baird, Cat. N. Am. B. 1859, No. 19.
Buteo insignatus Cass. Illustr. 1854, 102, 198, pl. 41 (= melanistic phase); in Baird's B. N. Am. 1858, 23.—Baird, Cat. N. Am. B. 1859, No. 21.
Buteo oxypterus Cass. Proc. Phil. Acad. vii, 1855, 282 (= young); in Baird's B. N. Am. 1858, 30; ib. ed. 1860, pl. 15, fig. 2.—Baird, Cat. N. Am. B. 1859, No. 28.—Coues, Key, 1872, 218.
Buteo swainsoni var. *oxypterus* B. B. & R. Hist. N. Am. B. iii, 1874, 266.

Hab. Western North America, north to the Yukon and McKenzie River districts, south to Central America (Guatemala and Costa Rica), east to the Mississippi Valley (Illinois, Wisconsin, Arkansas, etc.); occasional visitant further eastward, especially north of the Great Lakes and St. Lawrence. Massachusetts (Brewster). Straggling (?) over South America, as far as Patagonia, Argentine Republic, and Masafuera.

Sp. Char. Only three outer primaries with inner webs emarginated; third or fourth (usually the third) quill longest; first shorter than the sixth (usually about equal to—rarely shorter than—the seventh). Wing reaching nearly to the end of the tail; primaries exceeding secondaries by about one third the length of the wing. Tail even. Transverse scutellæ on front of the tarsus, 9–13. Color: tail grayish brown, or grayish, sometimes with a hoary cast, usually passing narrowly into whitish at the tip, and crossed by an indefinite number of very indistinct narrow bands of a darker shade. Colors of other portions extremely variable. *Adult.* Nearly uniform dusky brown above, the frontlet, concealed bases of occipital feathers, and the upper tail-coverts more or less mixed with white; beneath sometimes pure white, with a broad patch of uniform brown or rufous on the breast, and white throat-patch, but from this light extreme the lower parts vary to uniform dusky chocolate or sooty brown, through intermediate shades of ochraceous or rufous upon which ground deeper colored bars are visible on portions posterior to the pectoral patch; very rarely the lower parts are irregularly spotted with brown, while the pectoral patch is broken up into similar spotting by the admixture of more or less of white. In the extreme melanistic condition the bird is uniformly blackish brown, with white bars on the crissum. *Young.* Ochraceous and purplish black, in relative quantities varying according to the individual; the ochraceous forms the ground color, and usually predominates, but is sometimes much less in amount than the black; the tail is the same as in the adult.

a. Normal phase.

Adult. Above continuous blackish brown, the feathers usually with somewhat paler borders; outer scapulars and upper tail-coverts very rarely tinged with rufous—the latter usually more or less barred with white or ashy; occipital feathers white beneath the surface; primaries plain brownish black, without trace of bars on outer webs. Throat and chin more or less white, usually in form of a sharply defined patch; jugulum and breast brown, generally plain, very rarely spotted with whitish, the tint varying from rufous (male) to the color of the upper parts (female). Other lower parts varying from white to ochraceous (rarely almost rufous), generally more or less barred, or spotted transversely, with

dark brown or rufous—very rarely immaculate; crissum usually immaculate, but sometimes with faint and distant bars. Lining of the wing white, sometimes tinged with ochraceous, often immaculate, but generally sparsely (never heavily) spotted with rufous or brown. Under surface of the primaries cinereous (the outer two or three more whitish) sometimes plain, sometimes indistinctly barred with darker. *Male.* Breast-patch rufous with darker shaft-streaks. *Female.* Breast-patch dark grayish umber, or blackish brown (like the back).

Young. Above brownish black, with a faint purplish lustre, the feathers all paler on their borders; wing-coverts and scapulars more or less variegated with ochraceous or whitish spotting, this usually very conspicuous on the longer scapulars; upper tail-coverts ochraceous or whitish (their inner webs more brownish), barred with dusky. Tail as in adult. Ground color of the head, neck, and lower parts, ochraceous, varying in shade from very deep cream-color to nearly white; the feathers of the head, neck, anterior part of the back, and sides of the breast with median longitudinal tear-shaped spots of brownish black; lower parts generally spotted, sometimes everywhere, with black, and occasionally immaculate.

b. **Melanistic phase.**

Adult. Prevailing color plain blackish brown; the tibiæ, lining of the wings, and sometimes the breast, inclining more or less to rufous. Crissum usually white, sometimes immaculate, generally barred with rusty or blackish; occasionally with dusky and whitish bars of equal width. No white on the throat, or else but little of it. *Young.* Brownish black, variegated with ochraceous spotting, in amount varying with the individual.

This, being a western species, here reaching the normal eastern limit of its range, is one of the rarer species in Illinois. The writer has never identified it with certainty anywhere in Wabash or adjoining counties; but Mr. Nelson found it breeding on Fox Prairie, in Richland county, during the summer of 1875, and obtained specimens.

In his list of the birds of northeastern Illinois (p. 119), Mr. Nelson records the following as to its occurrence in that portion of the State:

"Of rather rare occurrence in this vicinity. Have only noted it during the migrations. I obtained an immature specimen May 30, 1875, at Riverdale, Ill., and have since seen others. As this species breeds in southern Illinois it probably also breeds in the northern portions of the State."

Buteo latissimus (Wils.)

BROAD-WINGED HAWK.

Falco pennsylvanicus Wils. Am. Orn. vi, 1812, 92, pl. 54, fig. 1 (not plate 46, fig. 1, which= *Accipiter velox*, young).—Aud. B. Am. i, 1831, pl. 91; Orn. Biog. i, 1839, 461.—Nutt. Man. i, 1832, 105.

Buteo pennsylvanicus Bp. 1830.—Aud. Synop. 1839, 7; B. Am. 1840, 43, pl. 10.—Cass. in Baird's B. N. Am. 1858, 29.—Baird, Cat. N. Am. B. 1859, No. 27.—Coues, Key, 1872, 217; Check List, 1874, No. 355; 2d ed. 1882, No. 524; B. N. W. 1874, 360.—B. B. & R. Hist. N. Am. B. iii, 1874.—Ridgw. Nom. N. Am. B. 1881, No. 443.

Falco latissimus Wils. Am. Orn. vi, 1812, 92, pl. 54, fig. 1.

Buteo latissimus Sharpe, Cat. B. Br. Mus. i, 1874, 193.

Hab. Eastern North America, north to Hudson's Bay; eastern Middle America and south to Ecuador, Venezuela, and upper Amazon; Cuba (resident); and other West India islands.

Sp. Char. *Adult.* Upper surface dark umber-brown, the feathers gradually paler toward edges; on the back the feathers more uniformly dusky, causing a prevalent blackish appearance. Rump and upper tail-coverts blackish vandyke-brown, the latter tipped with pure white, and with a concealed bar of the same, about the middle of each feather. Tail dull black, with an indistinct terminal band of dull brown, this fading terminally into whitish; across the middle of the tail a broad band of dull light umber (in some individuals approaching dull white) about three fourths of an inch in width; about as far anterior to the main band as this is from tip is another much narrower and less distinct band of the same color, crossing just beyond the ends of the coverts, or concealed by them. Primaries uniform brownish black, fading on the terminal edge into pale brown. Head above, and broad but inconspicuous "mustache," running from the rictus downward across the cheek, dull black; the crown posteriorly, with the occiput and nape, having the dull black much broken by lateral streaks of dull rufous on all the feathers; this dull rufous tint prevails on the rest of the head and neck, as well as the breast, leaving the lores and chin and lateral portion of the frontlet alone whitish; throat streaked with blackish. Beneath dull brownish rufous, that of the breast almost unvariegated; medially, however, are roundish spots of white on opposite webs, but these are not confluent; posteriorly, these spots become gradually more numerous and more transverse, forming on the flanks transverse bands, almost continuous; on the tibiæ the white prevails, the rufous bars being more distant, and connected only by a brown shaft line; lower tail-coverts with less numerous transverse spots of dull rufous. Lining of the wing ochraceous white, with sparse, rather small, irregularly deltoid spots of dull rufous; under surface of the primaries unvariegated white, as far as their emargination, beyond which they are black. Fourth quill longest; third a little shorter; second intermediate between fifth and sixth; first about equal to the ninth. *Female* (extremes No. 30,969, Brookline, Mass., and No. 30,895, Mirador, Mexico—the latter the larger): Wing, 11.00–11.30; tail, 6.80–7.10; tarsus, 2.30; middle toe, 1.30. *Male* (No. 32,309, Moose Factory, Hudson's Bay Territory): Wing, 10.50; tail, 6.30; tarsus, 2.30; middle toe, 1.20.

Young, first year (No. 11,984, Washington, D. C.). The blackish above is much variegated, being broken by narrow rusty borders to the interscapulars, rump-feathers, and lesser wing-coverts, broader and more ochraceous borders to scapulars and greater wing-coverts, and partially concealed whitish spotting on the former. Upper tail-coverts white, with broad bars of blackish brown; secondaries and primaries edged terminally with whitish. Tail dull umber-brown, growing darker terminally, narrowly tipped with white, and crossed with six indistinct, narrow bands of dusky, the (concealed) bases of all the feathers white. Superciliary region, cheeks, chin, throat, and entire lower parts delicate pale ochraceous or whitish cream-color; a conspicuous "mustache," a median longitudinal series of streaks on the throat, large longitudinal ovate spots on sides of breast, cordate spots on sides and flanks, and sagittate spots on tibiæ, clear blackish brown. The ochraceous deepest on the abdomen and crissum. Wing beneath as in adult.

Measurements.

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
Male.....	9.85-10.70	6.50-7.00	.70 ...	2.15-2.80	1.20-1.38	11
Female.....	11.00-11.40	7.00-8.00	.70-.78	2.20-2.70	1.30-1.40	14

"Audubon characterizes this Hawk as spiritless, inactive, and deficient in courage, seldom chasing other birds of prey, but itself frequently annoyed by the little Sparrow-Hawk, the Kingbird and Martin. It only attacks birds of a weak nature, young chickens and ducklings, and feeds on small animals and insects. It is usually found singly, is easily approached, and when wounded throws itself on its back, erects its top feathers, utters a hissing sound, and attempts to defend itself with its talons.

"A nest of this bird, found by Mr. Audubon, is said to have been about the size of that of the Crow, and to have been placed in the larger branches of a tree, near the trunk. It was composed externally of dry sticks and briars; internally, of small roots, and lined with numerous large feathers. The nest found by Professor Adams, near Middlebury, Vt., was quite large, and was coarsely constructed of sticks, and lined only with fibrous roots and fine grass. In this instance the eggs were three. This is the more usual number, though occasionally four or five are found." (*Hist. N. Am. B.*)

Genus **ARCHIBUTEO** Brehm.

Archibuteo Brehm, Isis, 1828, 1269. Type *Falco lagopus* Gmel.

Char. Similar to *Buteo*, but bill and feet weaker, wings longer, and tarsi feathered in front, to the toes. Bill small, compressed anteriorly, but very broad through the gape; upper outline of the cere ascending basally; nostril broadly oval, nearly horizontal. Tarsus densely feathered in front and on the sides down to the base of the toes; naked behind, where covered with irregular scales. Tarsus more than twice as long as the middle toe; basal half of the toes covered with small scales; outer toe longer than the inner; claws long, strongly curved, acute. Feathering of the head and neck normal. Wing very long; the third to fourth quill longest; first shorter than seventh; outer four or five with inner webs deeply emarginated. Tail moderate, rounded. Plumage full and soft.

The relationship of this well-marked genus appears to be nearest to *Buteo* and *Circus*, with an approach to *Circaëtus* in character of the plumage, especially the wing.

The two North American species are exceedingly distinct and may readily be separated by the following characters:

1. **A. lagopus sancti-johannis.** Bill comparatively narrow at the base and compressed terminally. Tarsus not more than 3 inches. Breast never immaculate white; no rufous on upper parts or tibiæ. *Adult:* Tail with several bands. *Light phase* with white prevailing, this much broken however, by dusky spotting, the spots rather coalesced on pectoral region. *Melanistic phase* sometimes uniform coal-black (more commonly dark brownish), with white lores, white under side of quills, and light (grayish or white) narrow bands on tail. *Young:* Terminal half (or less) of tail grayish brown, without bars, basal portion white (usually unvaried). *Light phase* grayish brown above, with dusky streaks and fulvous or buffy edgings; beneath ochraceous or buffy whitish, the belly and flanks usually dark brownish; breast streaked with brown. *Melanistic specimens* blackish brown, sometimes nearly uniform, but usually more or less streaked with fulvous edgings to the feathers. *Male:* Wing, 15.75–16.80; tail, 9.00–10.00; tarsus, 2.75–2.80. *Female:* Wing, 16.15–18.00; tail, 9.00–11.00; tarsus, 2.80–3.00.

. **A. ferrugineus.** Bill very broad, and somewhat depressed, at the base, the gape almost "fissirostral." Tarsus more than 3 inches. Breast usually immaculate white (rufous in melanistic specimens); upper parts and tibiæ rich rufous in adults. *Adult, light phase:* Upper parts and tibiæ fine rufous, the former with tear-shaped stripes, or spots, the latter with transverse bars of dusky. Tail white washed with ashy, and more or less stained with light rufous. *Melanistic phase:* Prevailing color deep chocolate-brown, more or less varied with rufous; tail as in the light phase. *Young, light phase:* Above grayish brown, the feathers edged with ochraceous or fulvous; tibiæ white, usually more or less barred with dusky; tail white only on basal portion and on inner webs, the terminal half (or more) grayish brown, usually with several more or less distinct darker bars. *Male:* Wing, 15.90–17.00; tail, 9.50–10.50; tarsus, 3.10–3.45. *Female:* Wing, 17.00–18.80; tail, 10.50–11.00; tarsus, 3.20–3.40.

Archibuteo lagopus sancti-johannis (Gmel.)

AMERICAN ROUGH-LEGGED HAWK.

Popular synonyms. Black Rough-leg; Black Hawk.

Falco sancti-johannis Gmel. S. N. i, 1788, 273.—Aud. Orn. Biog. ii, 1831, 381.

Buteo sancti-johannis Cuv. 1817.—Nutt. Man. i, 1832, 98.

Archibuteo sancti-johannis Gray, 1849.—Cass. in Baird's B. N. Am. 1858, 33.—Baird, Cat. N. Am. B. 1859, No. 31.

Archibuteo lagopus var. *sancti-johannis* Coues, Key, 1872, 218; Check List, 1874, No. 356; B. N. W. 1874, 361.—B. B. & R. Hist. N. Am. B. iii, 1874, 304.

Archibuteo lagopus sancti-johannis Ridgw. Nom. N. Am. B. 1881, No. 447.—Coues, 2d Check List, 1882, No. 525.

Falco lagopus Wils. Am. Orn. iv, 1821, pl. 33, fig. 1 (*nec* Brünn).—Aud. B. Am. 1831, pls. 166, 422; Orn. Biog. ii, 1831, 277.

Buteo lagopus Sw. & Rich. F. B.-A. ii, 1831, 52, pl. 28.—Nutt. Man. 1832, 97.—Aud. B. Am. i, 1840, 46, pl. 11.

Archibuteo lagopus Bp. 1850.—Cass. in Baird's B. N. Am. 1858, 32.—Baird, Cat. N. Am. B. 1859, No. 30.

Falco niger Wils. Am. Orn. i, 1812, pl. 53, figs. 1, 2.

Hab. Whole of North America, breeding in arctic and subarctic districts. (The true *A. lagopus* occurs in western Alaska.)

a. Normal plumage.

Sp. Char. *Adult male* (No. 43,073, Fort Resolution, June: J. Lockhart). Ground color of the upper parts dull umber-cinereous, this more rufous on the shoulders, and dull white on nape, scapulars, inner secondaries, and upper tail-coverts; rump entirely black, feathers bordered with whitish. All the feathers above with central oblong or irregular spots of black, this color predominating on top of head, and forming transverse bands across the wing-coverts and secondaries; upper tail-coverts pure white

each marked with an exceedingly irregular transverse spot of black. Tail white on basal two thirds, and narrowly, but sharply tipped with the same; subterminal portion pale mottled cinereous, with a very broad zone of black next the terminal white, and anterior to this three narrowed and more irregular bands of the same. Primaries blackish cinereous, with indistinct darker bands. Ground color of head and lower parts dull white; cheeks thickly streaked with black; ear-coverts and throat more sparsely streaked; forehead and sub-orbital region plain whitish. Breast with large, longitudinal but very irregular, oblong spots of dark brown, these largest and somewhat confluent laterally; lower part of breast with much less numerous and less longitudinal spots; tibiæ strongly tinged with rusty, and with tarsus, abdomen, crissum, and flanks having irregular transverse spots of blackish brown; lower tail-coverts unvariegated. Lining of wing white, with numerous spots of black, these becoming more rusty towards the axillars; a large space of continuous clear black, covering the under primary coverts and the coverts immediately anterior; under surface of primaries and secondaries pure white, the former becoming black at ends, the latter ashy; no bars, except toward shafts of the latter. Fourth quill longest; third equal to fifth; second intermediate between fifth and sixth; first equal to eighth. Wing, 16.50; tail, 9.00; tarsus, 2.50; middle toe, 1.30; bill from base of cere, 1.30; culmen, .90.

Adult female (No. 28,156, Philadelphia, Pa.: J. Krider). Generally similar to the male. On head and nape, however, the yellowish white predominates, the central black being much reduced; on the other hand, there is less white on the upper parts, the dull cinereous drab being much more evenly spread; darker markings less conspicuous. Tail white only at the base, the remaining portion being pale cinereous drab crossed with four or five distinct, very regular bands of black, the tip being very broadly ashy. Flanks with ground color light umber-drab, and marked with transverse bands of black. Lower surface generally as in the male; tail-coverts with two or three blackish spots, apparently out of place. Fourth quill longest; fifth much shorter than third; second intermediate between fifth and sixth; first intermediate between seventh and eighth. Wing, 17.00; tail, 9.00; tarsus, 2.40; middle toe, 1.30; bill from base of cere, 1.30; culmen, .85.

Young (No. 25,934, United States). Upper surface generally light umber, becoming lighter on scapulars and middle wing-coverts, but showing nowhere any trace of spots or bands; wings, scapulars, and back with blackish shaft-streaks, primaries approaching black toward ends, becoming white basally; upper tail-coverts white, with a hastate stripe of brown along shaft; tail, basal half white, terminal half plain drab, becoming darker terminally, the tip narrowly white. Head, neck, and lower plumage in general, white stained with ochraceous, this deepest on tibiæ and tarsi; head and neck streaked with dark brown, ear-coverts almost immaculate; breast with oblong spots of clear brown; flanks, abdomen, and anal region continuous uniform rich purplish vandyke-brown, forming conspicuous transverse belt; tibiæ and tarsi scarcely varied, the few markings longitudinal; lower tail-coverts immaculate. Under side of wing much as in adult; black area, however, more extended; lining much tinged with rufous, and with longitudinal streaks of dark brown.

b. Melanistic phase.

Adult male (No. 28,153, Philadelphia: J. Krider). General plumage blackish brown, the head streaked by whitish edges of the feathers; wing-coverts, secondaries, primaries, and tibial plumes paler terminally; tarsi mottled with whitish; upper and lower tail-coverts tipped indistinctly with white. Tail narrowly tipped with dull white, and with about five nearly obsolete pale ashy bands. Lining of wing black, spotted with white near edge; whole under surface of the primaries pure white anterior to their emargination, beyond which they are black. Third and fourth quills equal and longest; second intermediate between fifth and sixth; first shorter than seventh. Wing, 16.00; tail, 8.85; tarsus, 2.45; middle toe, 1.25.

Adult female (No. 12,008, Philadelphia: C. Drexler). Continuous pure coal-black; forehead white; occiput same beneath surface. Tail paler at tip, and crossed with four ill-defined though continuous bands of ashy white, the last of which is distant over two and a half inches from the tip; lower tail-coverts with a few white spots. Whole lining

of wing glossy coal black; under surface of primaries, anterior to their emargination, white mottled with ashy. Fourth and fifth quills equal and longest; third only a little shorter; second a little longer than sixth; first intermediate between seventh and eighth. Wing, 16.50; tail, 9.00; tarsus, 2.50; middle toe, 1.20.

Young. Similar, but the tail dusky, growing whitish toward the base, and without any bars.

A very fine adult male, representing the very extreme of the black phase, shot at Mount Carmel, Illinois, December 15, 1874, measured 21.00 inches in length by 50.00 in extent of wings; bill black, light blue basally, the lower mandible tinged with yellow; cere and rictus rich chrome-yellow; eyebrow olivaceous; iris burnt umber; toes rich chrome-yellow, the claws black.

This fine hawk is a winter resident in Illinois, but its abundance varies greatly with different years. From Dr. Brewer's account of its habits we quote as follows:*

"Audubon never met with this species south of North Carolina nor west of the Alleghanies. He regarded it as a sluggish bird, confining itself to the meadows and low grounds bordering the rivers and salt marshes, where its principal food appeared to be moles, mice, and other small quadrupeds. He has never known it to attack a duck on the wing, although it will occasionally pursue a wounded one. Except when alarmed, it flies low and sedately, and manifests none of the daring courage or vigor so conspicuous in most hawks. They are also described as somewhat crepuscular in habit, watching for their food long after sunset, and Mr. Richardson speaks of their hunting for their prey 'by the subdued daylight which illuminates even the midnight hours in the high parallels.' For these nocturnal hunts it is well fitted by the softness of its plumage, which renders its flight noiseless, like that of the more nocturnal birds."

In his list of the birds of Northeastern Illinois, Mr. Nelson refers to this species (pp. 119, 120) as follows: "Arrives in large numbers the first of October, and after remaining for a few weeks the majority pass further south for the winter. The last of February and first of March they depart for the north. Exceedingly shy except while migrating, and in consequence but few are shot. Mr. C. H. Smith captured alive a fine specimen in the black plumage, in the spring of 1874, and kept it until the early part of summer, when the hot weather caused its death."

For noble presence and piercing eye this bird has few equals among our Falconidæ. The specimen above mentioned bore a striking resemblance to a Golden Eagle.

* *Hist. N. Am. B.* iii, pp. 307-309.

Archibuteo ferrugineus (Licht.)

FERRUGINOUS ROUGH-LEGGED HAWK.

Popular synonym. California Squirrel Hawk.

Falco ferrugineus LICHT. Abh. K. Akad. Berl. 1838, 429.

Archibuteo ferrugineus GRAY, 1844.—CASS. in Baird's B. N. Am, 1858,34.—BAIRD, Cat. N. Am. B. 1859, No. 32.—COUES, Key, 1872, 218; Check List, 1874, No. 357; 2d ed., 1882, No. 526; B. N. W. 1874, 363.—B. B. & R. Hist. N. Am. B. iii, 1874, 300.—RIDGW. Nom. N. Am. B. 1881, No. 448.

HAB. Western United States, east to the Mississippi Valley and Texas; north to the Saskatchewan, south to table-lands of Mexico.

SP. CHAR. *Adult male* (No. 41,719, Fort Whipple, Arizona, Dec. 2, 1864: Dr. Coues). Ground color of head and neck white; each feather with a median streak of black, these growing broader posteriorly; and along the upper border of the ear-coverts so blended as to form an indistinct stripe back from the eye. Entire lower parts (except tibiæ) and whole under surface of the wing continuous pure white; breast with a faint tinge of delicate ochraceous, tibiæ and tarsi reddish white, tinged with or inclining to deep ferruginous on upper portion, and with numerous transverse bars of darker ferruginous and blackish; sides of the breast with a very few hair-like shaft-streaks of black; flanks with a few distant, dark ferruginous bars; axillars with two or three cordate spots of ferruginous near ends; feathers of the lining next the body, with blended, irregularly hastate spots of rufous; under primary coverts shading into cinereous on terminal half, and with indistinct broadly hastate spots of a darker shade of the same; primaries slaty beyond their emargination, deepening gradually toward their tips. Back, scapulars, and lesser and middle wing-coverts fine rufous, each feather with a broad median, longitudinal spot of brownish plumbeous-black, these on the back rather exceeding the rufous; longer wing-coverts and secondaries ashy umber, with very indistinct transverse bands of darker; primary coverts more ashy, and more distinctly banded; primaries fine chalky cinereous, this lightest on outer four; shafts pure white. Rump nearly uniform brownish black,—posterior feathers rufous with median black blotches; upper tail-coverts snowy white on outer webs, inner webs more rufous; a few concealed blackish transverse spots. Tail pale pearly ash, becoming white basally, and with a wash of dilute rufous along the edge of outer webs; inner webs white, with an ashy tinge thrown in longitudinal washes; outer feathers nearly white, with faint pale ashy longitudinal mottlings; shafts of tail-feathers pure white. Fourth quill longest; third but little shorter; second very much shorter than fifth; first intermediate between seventh and eighth. Wing, 16.75; tail, 9.20; tarsus, 2.95; middle toe, 1.35. "Length, 22.50; extent, 54.50. Iris clear light yellow; cere, edges of commissure, and feet bright yellow; bill very dark bluish horn; mouth, purplish flesh-color, livid bluish along edges."

Young female (No. 41,720, Fort Whipple: Dr. Coues). Almost exactly like the male, but black spots on rufous portions of upper parts much restricted, forming oblong spots in the middle of each feather; rump almost entirely rufous, variegated, however, with black. Longitudinal lines on breast more distinct; transverse bars on flanks and abdomen more numerous; third and fourth quills equal and longest; second intermediate between fifth and sixth; first equal to eighth. Wing, 17.25; tail, 9.75; tarsus, 2.95; middle toe, 1.40. "Length, 23 25; extent, 56.50. Iris light ochraceous brown."

Young female (No. 6,883, Los Angeles, California: Dr. Heermann). General plumage above grayish brown, interscapulars, scapulars, lesser and middle wing-coverts, and feathers of head and neck, edged laterally with light rufous; secondaries passing broadly into pale ashy at ends; primaries slaty brown with obscure darker bands; no appear-

ance of these, however, on secondaries; rump entirely blackish brown; upper tail-coverts wholly white. Tail hoary slate, basal third (or more) white, the junction of the two colors irregular and broken; tip obscurely paler; feathers obscurely blackish along edges, and with obsolete transverse spots of the same; white prevailing on inner webs. Beneath entirely pure white scarcely variegated; tibiæ and tarsi with a few scattered small transverse spots of blackish; flanks with larger, more cordate spots of the same. (Breeds in this plumage.)

This magnificent hawk, which Dr. Coues justly styles the "handsomest of the North American Falconidæ," is perhaps little more than a straggler to Illinois. It has been seen by the writer only in the far West, where the few observed were sailing majestically overhead, describing broad circles, and resembling the Golden Eagle in the manner of their flight. At such times it may be immediately distinguished from *A. sancti-johannis* by the snowy white of its lower plumage, which, as seen from below, is the predominating color of the bird.

Genus **AQUILA** Brisson.

Aquila Briss. Orn. i, 1760, 419. Type (by elimination), ***Falco chrysaëtos*** Linn.

Gen. Char. Form robust and structure powerful; bearing and general aspect of *Buteo* and *Archibuteo*. Wing long, the primaries long and strong, with their emarginations very deep. Tail rather short, slightly rounded or wedge-shaped. Bill stronger than in the preceding genera, its outlines nearly parallel, and the tip somewhat inclined backward at the point; commissure with a more or less prominent festoon; nostril narrowly oval, vertical; skin of the cere very hard and firm. Superciliary shield very prominent. Feet very strong, the membrane between the outer and middle toes very much developed; tarsus less than twice as long as the middle toe; outer toe equal to, or longer than the inner; claws very long and strong, very much graduated in size; scutellæ of the toes small except on the terminal joint, where they form broad transverse plates; tarsi densely feathered all round down to the base of the toes; tibial plumes well developed, loose-webbed, their ends reaching down to or beyond the base of the toes. Feathers of hind neck and occiput lanceolate, acute, and distinct, forming a "cape" of differently formed feathers. Third to fifth quill longest; first shorter than the seventh; outer five or six with their inner webs deeply emarginated.

This genus is almost peculiar to the Old World, where about seventeen so-called species are known, while America has no member of the genus exclusively its own, the single North American species being the same as the European one. Though the details of external structure vary somewhat, and the size ranges from that of *Buteo latissimus* to that of a sea-eagle (*Haliæetus*), the generic characters given in the above diagnosis apply equally well to all the species.

Aquila chrysaëtos (Linn.)

GOLDEN EAGLE.

Popular synonyms. Mountain Eagle; Ring-tailed Eagle; Black Eagle.

Falco canadensis Linn. S. N. ed. 10, i, 1758, 88.
Aquila canadensis Wils. Am. Orn. i, 1808, pl. 55, fig. 1.—Cass. in Baird's B. N. Am. 1858, 41.—Baird, Cat. N. Am. B. 1859, No. 39.
Aquila chrysaëtus var. *canadensis* Ridgw. 1873.—B. B. & R. Hist. N. Am. B. iii, 1874, 214.
Aquila chrysaëtus canadensis Ridgw. Nom. N. Am. B. 1881, No. 449.
Falco chrysœtos Linn. S. N. ed. 10, i, 1758, 88.
Aquila chrysaëtus Dumont. Dict. Sci. Nat. i, 1816, 339.—Aud. B. Am. i, 1840, 50, pl. 12; Synop. 1839, 9.—Coues, Key, 1872, 219; Check List, 1874, No. 291; 2d ed. 1882, No. 429; B. N. W. 1874, 368.
Falco fulvus "Linn." Wils. Am. Orn. vii, 1813, pl. 55, fig. 1.
Aquila fulva Nutt. Man. i, 1832, 62.

Hab. Whole of North America, south to elevated regions of Mexico; breeding within the United States chiefly in mountainous districts.

Sp. Char. *Adult male* (No. 24,167, Fort Crook, California, December 25: D. F. Parkinson). General plumage sooty blackish, this deepest on the head, throat, lower surface in general, under surface of the wings, back, scapulars, shoulders, secondaries, primaries, and rump; middle and secondary wing-coverts, upper and under tail-coverts, tarsi, and inside of tibiæ, considerably paler, inclining to light umber. Lanceolate feathers of occiput and hind neck with exposed portions light fulvous, the shafts black; dusky beneath the surface. Tail black, somewhat paler on basal half and with about three irregular, obsolete zigzag bands of pale brown (on two middle feathers ashy); no concealed white on breast. Fifth quill longest; third and fourth intermediate between fifth and sixth; second considerably shorter than sixth; first intermediate between eighth and ninth. Length 31.60; extent, 78.30. Wing, 24.50; tail, 13.40; culmen, 1.60; from base of cere, 2.15; tarsus, 3.85; middle toe, 2.40; hind claw (chord) 1.90.

Adult female (No. 12,006, Washington, D. C., March 7, 1869: C. Drexler). Almost exactly like the male. Black covering forehead, ear-coverts, cheeks, chin, throat, foreneck, and under parts generally (except the tarsi, inside and front of tibiæ, and lower tail-coverts which are light fulvous, the tarsi palest); "mane" more tawny than in the male. The lanceolate, pale, tawny feathers, which in the male cover only the occiput and neck, in the female extend forward over the top of the head, leaving the forehead only blackish. Upper parts and tail as in the male. Fourth quill longest; third slightly shorter than fifth; second intermediate between sixth and seventh; first intermediate between eighth and ninth. Wing, 26.00; tail, 14.25; culmen, 1.70; tarsus, 3.80; middle toe, 2.70; hind claw, 2.15; inner toe, 1.90; outer, 2.00; inner claw, 1.80; middle, 1.35; outer, 1.10.

Young male (No. 49,684, Camp Grant, near Tucson, Arizona, July 10, 1867: Dr. E. Palmer). Continuous deep sepia-black, with the purplish lustre; breast and scapulars with large concealed spots of pure white; lanceolate feathers of the "mane" dull brown, not conspicuously different from the throat; under surface of primaries showing much white basally, most extended on inner feathers. Upper and under tail-coverts more brownish than the rump, the basal portion white. Basal half, or more, of tail white (more ashy on outer feathers), distinctly defined against the broad, pure black, terminal zone; tarsi dull white, clouded with dilute brownish; feathers on inside of tibiæ tipped with white.

Young female—older? (No. 9,124, Washington, D. C. December, 1856: B. Cross). Similar, but black more brown; "mane" as in adult; tarsi dull whitish brown; tail-coverts deep umber-brown; tail as in young male, but terminal band narrower, the white occupying nearly the basal two thirds. Wing, 25.70; tail 14.75; culmen, 1.65; middle toe, 2.80; hind claw, 2.20.

The following is from Mr. Nelson's "List of the Birds of Northeastern Illinois" (*Bull. Essex Inst.* VIII., 1876, p. 120).

"Not very uncommon during winter. Arrives in November and departs early in spring. Formerly nested throughout the State. Dr. Hoy records the breeding of a pair of these birds in a tree near Racine in 1851. (Wis. Agr. Rep., 1852.) In December, 1874, while hunting Prairie Chickens in a field a few miles south of Chicago, my friend, Mr. T. Morris, was suddenly attacked with great fury by a pair of these birds, they darting so close that had he been prepared he could easily have touched the first one with his gun. As it arose to renew the attack he fired a charge of number six shot, and brought it down, dead. The second one then darted at him, and so rapidly that he did not fire until it had turned and was soaring up, but so near that the charge passed through the primaries in a body, disabling but not injuring the bird, which was then captured alive. The cause of this attack was explained by the proximity of a carcass upon which these birds had been feeding. The craw of the dead eagle contained a large quantity of carrion, as I learned upon skinning it."

Genus **HALIÆETUS** Savigny.

Haliæetus Savigny, Desc. de l' Egypte, 1809, 254. Type, *Falco albicilla* Linn.

Gen. Char. Form robust, and organization powerful, as in *Aquila*; size large. Bill very large, usually somewhat inflated, the chord of the arch of the culmen more than twice the length of the cere on top; commissure with a more or less distinct festoon and sinuation behind it. Nostril oval, obliquely vertical. Feet robust and strong, the tarsus less than one and a half times the middle toe; tarsus feathered in front and on the sides for about one half its length; front of the tarsus and top of the toes with an imperfectly continuous series of transverse scutellæ, entirely interrupted in the region of the digito-tarsal joint; the other portions covered with roundish, somewhat granular, scales, these larger on the posterior face. Claws large, strongly curved, and more obtuse, and less graduated in size, than in *Aquila*. No distinct web between outer and middle toes. Wing very large, the primaries well developed and strong; third to fifth quill longest; first longer than the ninth; outer five to six with inner webs deeply emarginated. Tail short and rounded, with twelve feathers. Feathers of the neck, all round, lanceolate.

North America possesses but two species of this very strongly characterized genus, and one of these claims a place in our fauna solely on account of its occurrence in Greenland. The other is the common Bald Eagle, the distribution of which includes the entire continent with the exception of the tropical portions.

Haliæetus leucocephalus (Linn.)

BALD EAGLE.

Popular synonyms. White-headed Eagle; Gray Eagle; American Sea Eagle; Bird of Washington; Washington Eagle or Sea Eagle.

Falco leucocephalus Linn. S. N. ed. 12, i, 1766, 124.—Wils. Am. Orn. iv, 1811, 89, pl. 26.—Aud. B. Am. 1831, 300, pl. 31; Orn. Biog. i, 1831, 160.

Haliaëtus leucocephalus Steph. 1826.—Nutt. Man. i, 1832, 72.—Aud. B. N. Am. i, 1840, pl. 14; Synop. 1839, 10.—Cass. in Baird's B. N. Am. 1858, 43.—Baird, Cat. N. Am. B. 1859, No. 43.—Coues, Key, 1872, 219; Check List, 1873, No. 362; 2d ed. 1882, No. 534; B. N. W. 1874, 369.—B. B. & R. Hist. N. Am. B. iii, 1874, 326.—Ridgw. Nom. N. Am. B. 1881, No. 451.

Falco ossifragus Wils. Am. Orn. vii, 1813, pl. 55, fig. 2 (= young).

Falco washingtonii Aud. Mag. Nat. Hist. ser. 1, i, 1828, 115; Orn. Biog. i, 1831, 58; B. Am. 1831, pl. 11; ed. 1840, i, 53, pl. 13.

Falco washingtonianus Nutt. Man. i, 1832, 67.

Haliaëtus washingtoni Jard. 1832.—Aud. Synop. 1839, 10; B. Am. i, 1839, 53, pl. 13.

Hab. Entire continent of North America, south to Mexico; northwest through the Aleutian chain to Bering Island, Kamtschatka; breeding throughout.

Sp. Char. *Adult.* Entire head and neck, upper and lower tail-coverts, and tail, immaculate pure white. Rest of the plumage brownish black, the feathers fading toward the edges, these paler borders being most conspicuous on the upper surface. Primaries uniform deep black. Bill, cere, superciliary shield, and feet, deep chrome-yellow; iris Naples yellow. *Male* (No. 12,017, Philadelphia: C. Drexler): Wing, 22.00; tail, 10.50; culmen, 1.90; top of cere, .80; depth of bill, 1.30; tarsus, 3.00; middle toe, 2.60; outer, 2.00; inner, 1.50; posterior, 1.30. Wing formula, 3=4-5, 2-6; 1=7. *Female* (No. 11,936, Philadelphia: C. Drexler): Wing, 25.00; tail, 12.75; culmen, 2.20; top of cere, .80; tarsus, 3.10; middle toe, 2.85. Wing formula, 3=4, 5-2-6-7-1, 8.

Young, second year (?) (No. 58,977, Mount Carmel, Wabash county, Illinois, December, 1869: D. Ridgway). Head and neck brownish black, white beneath the surface, the penicillate ones of the neck tipped with pale brown. Prevailing color of other portions blackish brown inclining to umber on the dorsal region, wing-coverts, and lower parts; all the feathers white at their roots, this much exposed on the lower parts, where the brown forms tear-shaped terminal spots; axillars and lining of the wing white, each feather of the latter region with a median lanceolate stripe of blackish brown. Primaries and tail brownish black; inner webs of secondaries and tail-feathers spattered longitudinally with creamy white. Bill and cere black; iris brown; feet yellow. Wing, 25.50; tail, 15.00; culmen, 2.10; tarsus, 3.10; middle toe, 2.60.

Young, first year (No. 41,595, eastern United States?). Whole plumage, nearly uniformly black, this very continuous above; beneath, the basal white is much exposed, producing a somewhat spotted appearance. Primaries and tail deep black, the inner webs of the latter sprinkled with cream color.

Young in down (Washington, D. C.) Downy covering uniform deep sooty gray; the sprouting feathers on wings, etc., all brownish black.

The following measurements represent the average of the sexed specimens which have been examined. It will be noticed that the young of either sex exceed the adults in the length of the wing and tail. Altogether more than sixty specimens have been inspected.

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
Adult males...	20.00–23.00	11.00–13.00	1.85–2.00	2.65–3.40	2.35–2.65	10
Young males..	23.50–25.00	12.00–15.25	1.95–2.20	3.20–3.30	2.70–2.90	5
Adult females.	23.50–25.00	12.50–13.50	1.90–2.20	3.40–3.60	2.55–2.80	7
Young females	25.50–26.00	15.00–15.50	2.10–2.20	3.25–3.70	2.55–3.10	2

A very fine adult female obtained at Mount Carmel, Illinois, January 1, 1870, measured 34.50 inches in length and 85.00 inches (7 feet 1 inch) in spread of wings; weight 12 pounds. Bill and cere uniform wax-yellow, inclining to chrome; rictus and eyebrow pale chrome-yellow; iris clear light Naples yellow; tarsi and toes deep chrome-yellow, claws black.

A very large specimen in the collection of the Audubon Club, of Chicago, measured 3 feet 6¾ inches in total length and 8 feet 1½ inches in extent.

Along all the larger water-courses in our State the Bald Eagle is a more or less common bird, and may be met with at all times of the year.

"The White-headed Eagle," writes Dr. Brewer,* "appears to be equally well adapted by nature for the endurance of heat or cold, and is apparently indifferent to either. Its residence is influenced only by its abundance of food, especially that of fish; and it seems to matter very little whether that plenty is procurable within the Arctic circle or on the coast and rivers of Florida and Texas. In places like the Falls of Niagara, where the stream is ever liable to contribute the remains of animals destroyed by the descent of the torrent, this eagle is especially abundant. Unscrupulous, greedy, voracious, not select in its choice of food, and capable of providing for itself when necessity compels, we find this not altogether suitable emblem of our country now enacting the tyrant and robber and plundering the Fishhawk of the fruits of its industry, now sharing with the Raven and the Vulture the dead salmon of the Columbia, and in other places diving for and catching its own fish. The impetuosity and skill with which it pursues, overtakes, and robs the Fishhawk, bearing off a fish it has just taken, must be witnessed to be appreciated; and the swiftness with which the Eagle can dart down upon and seize the booty, which the Hawk has been compelled to let fall, before it reaches the water, is not

* *Hist. N. Am. B.* iii, p. 331.

the least wonderful feature of this striking performance. On the banks of the Columbia, where there are no Fishhawks to depend upon, this bird finds an easy subsistence on the vast numbers of dead and dying salmon which abound; and in Florida Mr. Allen has observed it dive and catch its own fish. This is also confirmed by the statements of other naturalists. Wilson also accuses this Eagle of destroying great numbers of young pigs in the Southern States, young lambs, and even sickly sheep; and in one instance it attempted to carry off a child, which was only saved by its dress giving way."

Suborder **SARCORHAMPHI.**—The American Vultures.

Family **CATHARTIDÆ.**—The American Vultures.

(*Cathartidæ* Gray, 1842.—Huxley, P. Z. S. 1867, p. 463. *Cathartinæ* Lafr. 1839. *Sarcorhamphidæ* Gray, 1848. *Gryphinæ* Reich. 1850.)

The Suborder *Sarcorhamphi* (briefly characterized on page 45) is exactly equivalent to the Family *Cathartidæ*, the essential characters of which are as follows:

Char. Whole head, and sometimes the neck, naked; eyes prominent, and not shaded by a superciliary shield. Cere much elongated, much depressed anteriorly below the very arched culmen; nostrils longitudinal, horizontal, the two confluent or perforate. Middle toe very long, and the hind one much abbreviated. A web between the base of the inner and middle toes.

The so-called family *Vulturidæ*,* as long recognized, included all the naked-headed carrion-feeding *Raptores* of both the Old World and the New. The later researches of science, however, have shown the necessity of separating the Vultures of the latter continent from those of the former, and ranking them as a distinct family, while at the same time the Old World Vultures are found to be merely modified *Falconidæ*, the resemblance between the *Cathartidæ* and the vulturine *Falconidæ* being merely a superficial one of analogy, and not one of affinity. Scavengers of the countries they respectively inhabit, they perform the same office in nature; therefore, for adaptation to a similar mode of life their external characters are correspondingly modified.

The *Cathartidæ* differ from the *Vulturinæ*† as to their external structure in the following particulars, the osteological structure being entirely different in the two groups; the latter resembling the *Falconidæ* in all the characters which separate the latter family from the *Cathartidæ*.

* Established by Vigors in 1825.

† From the *Vulturinæ* are excluded the genera *Gypætos* and *Neophron*, each of which probably constitutes a subfamily by itself.

Cathartidæ. Nostrils horizontal, perforate; a well-developed web between the inner and middle toes, at the base.

Vulturinæ. Nostrils vertical, not perforate; no trace of web between inner and middle toes.

In habits, as before stated, the *Cathartidæ* resembles the vulturine *Falconidæ* of the Old World. "They lack the strength and spirit of typical *Raptores*, and rarely attack animals capable of offering resistance; they are voracious and indiscriminate gormandizers of carrion and animal refuse of all sorts,—efficient and almost indispensable scavengers in the warm countries where they abound. They are uncleanly in their mode of feeding; the nature of their food renders them ill-scented, and when disturbed they eject the fetid contents of the crop. Although not truly gregarious, they assemble in multitudes where food is plenty, and some species breed in communities. When gorged, they appear heavy and indisposed to exertion, usually passing the period of digestion motionless, in a listless attitude, with their wings half spread. But they spend most of the time on the wing, circling high in the air; their flight is easy and graceful in the extreme, and capable of being indefinitely protracted. On the ground, they habitually walk instead of progressing by leaps. Possessing no vocal apparatus, the Vultures are almost mute, emitting only a weak hissing sound." (Coues.)

The *Cathartidæ* all belong to the tropical and warm-temperate portions of the continent, only one species (*Cathartes aura*) extending its range as far as the border of the colder regions. The famous Condor (*Sarcorhamphus gryphus*) of the Andes and the equally large Californian species (*Pseudogryphus californianus*) are amongst the largest birds of flight in the world, being exceeded in size by none, and rivaled by but one or two of the Vultures of the eastern hemisphere.

The two genera having representatives in eastern North America (both of them found in Illinois) may be readily distinguished by the following characters:

1. **Cathartes.** Nostril occupying the whole of the nasal cavity, its anterior end broadly rounded; cere decidedly arched on top, its upper and lower outlines divergent basally; mandible much less deep than the maxilla; skin of neck without corrugations, but that of the head usually with irregular papillæ in front of eye and on crown (these wanting in the young). Wing long, the primaries reaching to or beyond end of the rather long, much rounded, tail.
2. **Catharista.** Nostril occupying only the posterior half of the nasal fossæ, its anterior end contracted and acute; cere depressed and not perceptibly arched, much broader than deep, its upper and lower outlines parallel; maxilla and mandible about equal in depth. Skin of neck transversely corrugated or wrinkled. Wing short, the primaries scarcely reaching to the middle of the short, truncate or slightly emarginated tail.

GENUS CATHARTES ILLIGER.

Cathartes ILLIG. Prodromus, 1811, 236. Type (by elimination), *Vultur aura* LINN.
Rhinogryphus RIDGW. in Hist. N. Am. B. iii, 1874, 337, 343. Same type.

GEN. CHAR. Size medium (about equal to *Neophron*), the wings and tail well developed, the remiges very long and large. Head and upper portion of the neck naked; the skin smooth, or merely wrinkled; a semicircular patch of antrorse bristles before the eye. Nostril very large, with both ends broadly rounded, occupying the whole of the nasal orifice. Cere contracted anteriorly, and as deep as broad; lower mandible not so deep as the upper. Plumage beginning gradually on the neck, with broad, rounded, normal feathers. Ends of primaries reaching beyond the end of the tail; third or fourth quill longest; outer five with inner webs appreciably sinuated. Tail much rounded; middle toe slightly longer than the tarsus. Sexes alike.

Cathartes aura (Linn.)

TURKEY BUZZARD.

Popular synonyms. Turkey Vulture; Buzzard.

Vultur aura LINN. S. N. ed. 12, i, 1766, 122.—WILS. Am. Orn. ix, 1814, 96, pl. 75, fig. 1.
Cathartes aura ILLIG. 1811.—NUTT. Man. i, 1832, 43.—AUD. Orn. Biog. ii, 1835, 296; v, 1839, 339, pl. 151; Synop. 1839, 3; B. Am. i, 1840.15 pl 2.—CASS. in Baird's B. N. Am. 1858, 4. —BAIRD, Cat. N. Am. B. 1859, No. 1.– COUES, Key, 1872, 222; Check List, 1874, No. 365; 2d ed. 1882, No. 537; B. N. W. 1874, 379.—RIDGW. Nom. N. Am. B. 1881, No. 454.
Rhinogryphus aura RIDGW. in Hist. N. Am. B. iii, 1874, 344.

HAB. Whole of tropical and temperate America, including West Indies; north to southern New England, Ontario and the Saskatchewan, south to Chili, Patagonia, and Falkland Islands. Resident south of 40°.

SP. CHAR. Length, about 27.00–30.00; extent of wings, about 6 feet; weight, 4–5 pounds. Wing, 20.00–23.00; tail, 11.00–12.00; culmen, about 1.00; tarsus, 2.25–2.30; middle toe, 2.50; outer, 1.55; inner, 1.25; posterior, .80. Iris brown; tarsi and toes dirty whitish, tinged with yellow or flesh color.

Adult. Bill chalk-white; naked skin of the head and neck livid crimson, approaching dilute carmine on the cere, and sometimes with whitish papillæ on the crown and before the eye. General plumage dull black, this deepest and uniform on the lower parts; upper parts with a violet lustre, changing to greenish posteriorly, all the feathers of the dorsal region and the wing-coverts passing into light brownish on their borders. Primaries and tail-feathers dull black, their shafts clear pale brown; sometimes nearly white. *Male* (No. 12,015, Maryland: M. F. Force): Wing, 22.00; tail, 12.00; culmen, .95; tarsus, 2.30; middle toe, 2.50; outer, 1.55; inner, 1.25; posterior, .80. *Female* (No. 49,681, Camp Grant, Arizona: Dr. E. Palmer): Wing, 20.00; tail, 11.50.

Young. Bill, and naked skin of the head and neck, livid blackish, the occiput and nape with more or less of whitish down; plumage more uniformly blackish, the brownish borders above less distinct; the reflections of the plumage rather green than violaceous.

The Turkey Buzzard is a very abundant bird in the southern half of the State, and is a permanent resident at least as far north as Mt. Carmel, though it is only during clear bright days that specimens are seen in midwinter. In the extreme northern portion

of the State, however, it appears to be more or less rare. Mr. Nelson, in his list of the birds of Cook county (*Bull. Essex Inst.* VIII., 1876, p. 120) says:

"A very irregular and rare visitant in this vicinity. Sixty miles south it is a common summer resident, yet I know of but very few instances of its occurrence here. A specimen was captured, after a snow storm, late in autumn, several years since at Waukegan, by Mr. Charles Douglas."

In the vicinity of Mt. Carmel it is very abundant, many pairs breeding in hollow trees, mostly old sycamores, in the river bottoms, especially in the vicinity of the cypress swamps.

"The flight of the Turkey Buzzard," says Dr. Brewer,* "is graceful, dignified and easy. It sails with a steady, even motion, with wings just above the horizontal position, with their tips slightly raised. They rise from the ground with a single bound, give a few flaps to their wings, and then proceed with their peculiar, soaring flight. They rise very high in the air, moving round in large circles. They are of gregarious habits, and usually associate in companies of from ten to a much larger number. They feed upon all kinds of animal food, and are accused by Audubon of sucking eggs and devouring the young of Herons and other birds. Yet in Trinidad they were observed by Mr. E. C. Taylor associating with the poultry, apparently upon the most amicable terms, and, although surrounded with chickens of all sizes, they were never known to molest them. Mr. Audubon also states that they devour birds of their own species when dead. They are said to walk well on the ground and on the roofs of houses, and associate and even roost in company with the Black Vulture."

Genus **CATHARISTA** Vieillot.

Catharista Vieill. Analyse, 1816, 21. Type (by elimination)=*Vultur urubu* Vieill. *V. atratus* Bartr.

Gen. Char. Size of *Cathartès*, but more robust, with shorter wings, and very different flight. Wings with the remiges abbreviated, the primaries scarcely reaching to the middle of the tail. Tail even, or faintly emarginated. Head and upper portion of the neck naked, the feathers extending farther up behind than in front; naked skin of the side of the neck transversely corrugated; no bristles before the eye. Nostril narrow, occupying only about the posterior half of the nasal orifice, its anterior end contracted and acute. Cere not contracted anteriorly, but the upper and lower outline parallel; much depressed, or broader than deep. Plumage beginning gradually with normal, or broad and rounded, feathers. Fourth or fifth quill longest; outer five with inner webs sinuated. Tarsus longer than middle toe.

* *Hist. N. Am. B.* iii, pp. 347-349.

This well-marked genus is composed of a single species, which is confined to the tropical and warm-temperate portions of America. The differences from the other Vultures, which this bird exhibits in its habits and especially in its flight, are very striking, and furnish additional characters distinctive of the genus.

Catharista atrata (Bartr.)

BLACK VULTURE.

Popular synonym. Carrion Crow.

Vultur atratus Bartr. Trav. 1792, 289.

Cathartes atratus Less. 1828.—Aud. Synop. 1839, 3; B. Am. i, 1840, 17, pl. 3.—Cass. in Baird's B. N. Am. 1858, 5.—Baird, Cat. N. Am. B. 1859, No. 3.—Coues, Key, 1872, 222; Check List, 1874, No. 366; B. N. W. 1874, 383.

Catharista atrata Gray, 1869.—B. B. & R. Hist. N. Am. B. iii, 1874, 351.—Ridgw. Nom. N. Am. B. 1881, No. 455.—Coues, 2d Check List, 1882, No. 538.

Cathartes iota ("Mol.") Bp. 1828. (*nec* Mol.).—Nutt. Man. i, 1832, 46.—Aud. Orn. Biog. iii, 1835, 35; v, 1839, 345, pl. 106.

Hab. Whole of tropical, subtropical, and warm-temperate America, including West Indies; north, on Atlantic coast, regularly to North Carolina, casually to New Brunswick; in the interior to southern Ohio, Indiana, and Illinois, and west of the Mississippi to northern Dakota.

Sp. Char. Form heavy; the wings and tail short, the latter square; the remiges and rectrices very hard and stiff. Bill strong, the mandibles broader than deep, and of about equal depth, the terminal hook well developed; upper and lower outlines of the cere parallel, and nearly straight. Nostril narrow, its anterior end contracted and pointed. Wing, 17.00–17.50; tail, 7.50–8.50; culmen, .90–.95; tarsus, 3.00; middle toe, 2.90; outer, 1.90; inner, 1.50; posterior, .75.

Adult. Bill blackish the point horny white; naked skin of the head and upper part of the neck blackish. Entire plumage continuous, perfectly uniform dull black; primaries becoming grayish basally (more hoary whitish on their under surface), their shafts pure white for their whole length.

For some unexplained reason, the Black Vulture is an uncommon bird in most parts of Illinois. In fact, it does not seem to be numerous anywhere, even in the extreme southern portion of the State. Near Mt. Carmel the writer has met with it only in the cypress swamp, where, during spring and summer, it was several times seen, but always singly. In the same locality the Turkey Buzzards could be counted by hundreds. It seems, however, to be a very local species, and the country about Mt. Carmel may be in some way unsuited to its habits. It is so conspicuously different in appearance and manner from the Turkey Buzzard that there is no chance of confounding the two; therefore, the species cannot have been overlooked.

"Both in their mode of flight and in their movements upon the ground this species differs materially from the Turkey Buzzard. The latter walks steadily while on the ground, and when it mounts does so by a single upward spring. The Black Vulture is ill at ease on the ground, moves awkwardly, and when it essays to fly upward takes several leaps in a shuffling side-long manner before it can rise. Their flight is more labored, and is continued by flapping several times, alternated with sailing a limited distance. Their wings are held at right angles, and their feet protrude beyond their tail-feathers. In all these respects the differences between the two birds are very noticeable, and plainly mark the species." (BREWER.)

Order COLUMBÆ.—The Pigeons or Doves.

Char. Basal part of the bill tumid and covered with a soft skin, in which are situated the narrow, longitudinal nostrils, overhung by a valve-like scale or covering; terminal portion of the bill hard; the culmen more or less strongly arched. Hind toe usually incumbent, and front toes generally cleft to the extreme base. Plumage peculiarly dense, the feathers without aftershafts, and very easily detached from the skin. Primaries ten; secondaries, eleven to fifteen; rectrices, twelve to fourteen.

The number of families composing this order is at present somewhat uncertain. Whatever the number, however, America possesses but one, the *Columbidæ*, or true Pigeons, whose characters are as follows:

Family COLUMBIDÆ.—The Pigeons.

"Char. The basal portion of the bill covered by a soft skin, in which are situated the nostrils, overhung by an incumbent fleshy valve, the apical portion hard and convex. The hind toe on the same level with the rest; the anterior toes without membrane at the base. Tarsi more or less naked; covered laterally and behind with hexagonal scales.

"The bill of the *Columbidæ* is always shorter than the head, thinnest in the middle: the basal half covered by a soft skin; the apical portion of both jaws hard; the upper one very convex, blunt, and broad at the tip, where it is also somewhat decurved. There is a long nasal groove, the posterior portion occupied by a cartilaginous scale, covered by a soft cere-like skin. The nostrils constitute an elongated slit in the lower border of the scale. The culmen is always depressed and convex. The bill is never notched in the true Doves, though *Didunculus* shows well-defined serrations. The tongue is small, soft, and somewhat fleshy.

"The wing has ten primaries, and eleven or twelve, rarely fifteen, secondaries; the latter broad, truncate, and of nearly equal length. The tail is rounded or cuneate, never forked.

"The tarsus is usually short, rarely longer than the middle toe, scutellate anteriorly, [except in *Starnœnas*] and with hexagonal plates laterally and behind; sometimes naked. An inter-digital membrane is either wanting entirely, or else is very slightly indicated between the middle and outer toes." (*Hist. N. Am. B.*)

The two principal groups of American *Columbidæ*, which for convenience may be termed subfamilies, may be briefly distinguished as follows:

Columbinæ. Tarsus shorter than the lateral toes, feathered above.

Zenaidinæ. Tarsus longer than the lateral toes, entirely bare of feathers.

The North American genera (but two of which come within the field of this work) are characterized as below, the extralimital genera being in brackets:

Subfamily **Columbinæ.**

Char. Tarsi stout, short, with transverse scutellæ anteriorly; feathered for the basal third above, but not at all behind. Toes lengthened, the lateral decidedly longer than the tarsus. Wings lengthened and pointed. Size large. Tail-feathers twelve.

[1. **Columba.** Head large; tail short, broad, and rounded.]

2. **Ectopistes.** Head very small; tail much lengthened, cuneate.

Subfamily **Zenaidinæ.**

Char. Tarsi stout, lengthened; always longer than the lateral toes, and entirely without feathers; the tibial joint usually denuded. Tarsus sometimes with hexagonal scales anteriorly. Tail-feathers sometimes fourteen.

a. Zenaideæ. Size moderate. Wings lengthened, acute, the primaries much longer than the secondaries. Tarsus scutellate anteriorly. A blackish spot beneath the auriculars (except in *Engyptila*); tail-feathers tipped with white, and with, a blackish subterminal bar. Sides of the neck with a metallic gloss.

[3. **Engyptila.** *Outer primary abruptly attenuated terminally.* Color plain grayish brown above, lighter and (usually) more vinaceous below; under side of wing mainly rufous.]

[4. **Melopelia.** Bill lengthened, much depressed. A white patch on the wing; no black spots on the scapulars; plumage ashy, lighter beneath. Tail of twelve feathers, rounded.]

[5. **Zenaida.** Bill smaller, more compressed. No white patch on the wing; scapulars with black spots. Above olivaceous, beneath vinaceous. Tail usually of twelve feathers, rounded.]

6. **Zenaidura.** Similar to *Zenaida*, but tail of fourteen feathers, much more lengthened, and graduated.

b. *Chamæpelieæ.* Size very small. Wings rounded, the primaries scarcely longer than the tertials. Tarsus scutellate anteriorly. No blackish spot beneath the auriculars; no metallic gloss on sides of the neck.

[7. **Scardafella.** Tail of twelve feathers, lengthened (much longer than wings), doubly rounded, the lateral feathers much shorter; the three outer pairs with white terminally.]

[8. **Columbigallina.** Tail of twelve feathers, short (much less than wings), simply rounded, the lateral feathers only slightly shorter; outer feathers without white terminally, or with only a slight edging. Wing-coverts with oblique black spots, and body without transverse blackish bars.]

c. *Geotrygoneæ.* Size moderate (generally a little larger than *Zenaida*); form robust, or quail-like. Legs very stout; tarsi decidedly longer than the middle toe, variously scaled anteriorly. Wings short, very broad, and much rounded, but the primaries decidedly longer than the secondaries.

[9. **Starnœnas.** Legs very stout; tarsi covered anteriorly with hexagonal scales; crown blue; a black gular patch, bordered below by white.]

[10. **Geotrygon.** Legs moderate; tarsi covered anteriorly with transverse scutellæ; crown never blue, and throat without black patch or white markings.]

Genus **ECTOPISTES** Swainson.

Ectopistes Swainson, Zoöl. Jour. iii, 1827, 362. Type, *Columba migratoria* Linn.

"Gen. Char. Head very small. Bill short, black; culmen one third the rest of the head; feathers of the chin running very far forward; gonys very short. Tarsi very short, half covered anteriorly by feathers. Inner lateral claw much larger than outer, reaching to the base of the middle one. Tail very long and excessively cuneate; about as long as the wings. First primary longest. Black spots on scapulars; a black and a rufous spot on inner webs of tail-feathers.

"This genus is readily distinguished from the other *Columbinæ*, by the excessively lengthened and acute middle feathers. It formerly included the *Columba carolinensis*, but this, with more propriety, has been erected into a different genus (*Zenaidura*), and will be found in the next section." (*Hist. N. Am. B.*)

The *E. migratorius*, or common Wild Pigeon or Passenger Pigeon of eastern North America, is slaty blue above, the wings and scapulars more brownish and spotted with black; the inner webs of the tail-feathers have each a rufous and a black spot. The male has the whole head bluish plumbeous, the fore-neck and jugulum rich cinnamon, passing into vinaceous on the breast, this gradually

becoming paler posteriorly; the sides of the neck richly glossed with metallic solferino-purple. The female has the head, foreneck, and jugulum brownish ashy or drab, gradually lightening posteriorly.

Ectopistes migratorius (Linn.)

PASSENGER PIGEON.

Popular synonym. Wild Pigeon.

Columba migratoria Linn. S. N. ed. 12, i, 1766, 285.—Wils. Am. Orn. i, 1808, 102, pl. 44, fig. 1.—Nutt. Man. i, 1832, 629.—Aud. Orn. Biog. i, 1831, 319; v. 1839, 561, pl. 62.

Ectopistes migratoria Sw. Zoöl. Jour. iii, 1827, 355.—Aud. Synop. 1839, 174; B. Am. v, 1842, 26, pl. 285.—Baird, B. N. Am. 1858, 600; Cat. N. Am. B. 1859, No. 448.—Coues, Key, 1872, 225; Check List, 1874, No. 370; 2d ed. 1882, No. 543; B. N. W. 1874, 387.—B. B. & R. Hist. N. Am. B. iii, 1874, 808, pl. 57, fig. 4.—Ridgw. Nom. N. Am. B. 1881, No. 459.

Hab. Whole of temperate eastern North America, west to the Rocky Mountains; no extralimital records, except Cuba and England (accidental). Straggler to Western Province of United States (Nevada, eastern Oregon, etc.).

Sp. Char. *Adult male.* Head and hind-neck bluish plumbeous, lighter on chin; rump bluish plumbeous; back, scapulars, and tertials grayish brown or drab; wings more plumbeous, the innermost coverts, with tertials and outer scapulars, spotted with black. Tail shading from dusky on middle rectrices through gradually lighter slate and ashy to white on lateral feathers; inner web of each feather (except middle pair) with a transverse spot of black, preceded by another of rufous. Jugulum and breast rich vinaceous rufous, gradually changing to soft pinkish vinaceous on the sides. Crissum and middle of abdomen white. Hind part and sides of neck with brilliant reflections of metallic solferino-purple, changing to violet, green, golden, etc. Bill black, the cere glaucous whitish, the rictus crimson; iris bright red; legs and feet lake-red. *Adult female.* Head brownish gray, paler toward throat; jugulum and breast brownish gray or drab, changing to paler brownish gray on sides; metallic reflections on neck less brilliant. *Young.* Somewhat like the adult female, but the wing-coverts, scapulars, and feathers of the head, neck, and jugulum tipped with whitish, causing a mottled appearance; rusty margins of primaries more distinct, widely bordering the tips of the quills. Bill black, the rictus pinkish; iris brown, with a narrow outer ring of carmine; feet pale livid salmon-pink, the scutellæ more brownish; claws blackish.

Wing, 8.40–8.50; tail, 8.20–8.60; culmen, .60–.65; tarsus, 1.15; middle toe, 1.15.

So much has been written about the extraordinary abundance, in past years, of the Wild Pigeon, that the subject may seem threadbare. Still, it is so full of interest, that we quote the following from *History of North American Birds* (Vol. III., pp. 371–374):

"Several writers, who have witnessed the occasionally enormous flights of these Pigeons, have given very full and graphic accounts of their immense numbers that seem hardly credible to those who have not seen them. Mr. Audubon relates that in 1813, on his way from Henderson to Louisville, in crossing the barrens near Hardensburg, he observed these birds flying to the southwest in greater

numbers than he had ever known before. He attempted to count the different flocks as they successively passed, but after counting one hundred and sixty-three in twenty-one minutes, he gave it up as impracticable. As he journeyed on, their numbers seemed to increase. The air seemed filled with Pigeons, and the light of noonday to be obscured as by an eclipse. Not a single bird alighted, as the woods were destitute of mast, and all flew so high that he failed to reach any with a rifle. He speaks of their aërial evolutions as beautiful in the extreme, especially when a Hawk pressed upon the rear of a flock. All at once, like a torrent, and with a noise like that of thunder, they rushed together in a compact mass, and darted forward in undulating lines, descending and sweeping near the earth with marvellous velocity, then mounting almost perpendicularly in a vast column, wheeling and twisting so that their continued lines seemed to resemble the coils of a gigantic serpent. During the whole of his journey from Hardensburg to Louisville, fifty-five miles, they continued to pass in undiminished numbers, and also did so during the three following days. At times they flew so low that multitudes were destroyed, and for many days the entire population seemed to eat nothing else but Pigeons."

Genus **ZENAIDURA** Bonaparte.

Zenaidura Bonap. Consp. Avium, ii, 1854, 84. Type, *Columba carolinensis* Linn.

"Gen. Char. Bill weak, black; culmen from frontal feathers about one third the head above. Tarsus not as long as middle toe and claw, but considerably longer than the lateral ones; covered anteriorly by a single series of scutellæ. Inner lateral claw considerably longer than outer, and reaching to the base of middle. Wings pointed; second quill longest; first and third nearly equal. Tail very long, equal to the wings; excessively graduated and cuneate, of fourteen feathers." (*Hist. N. Am. B.*)

The fourteen tail-feathers render this genus very conspicuous among the North American doves. It was formerly placed with the Passenger Pigeon in *Ectopistes*, but has nothing in common with it but the lengthened tail, as it belongs to a different subfamily. At present three species are known, one (*Z. graysoni* Lawr.) being peculiar to Socorro Island, well off the coast of western Mexico, the other (*Z. yucatanensis* Lawr.) from the vicinity of Merida, in northern Yucatan. The latter is possibly a hybrid between *Z. carolinensis* and *Zenaida amabilis*, being exactly intermediate in form and coloration, while the type specimen still remains unique. (Cf. *Hist. N. Am. B.* Vol. III., p. 382, and "The Auk," Vol. I., Jan. 1884, p. 96.)

Zenaidura macroura (Linn.)

MOURNING DOVE.

Popular synonyms. Turtle Dove; Americ n Turtle Dove; Common Dove; Carolina Dove.

Columba macroura Linn. S. N. ed. 10, i, 1758, 164 (part).

Zenaidura macroura Ridgw. Proc. U. S. Nat. Mus. viii, 1885, 355.

Columba carolinensis Linn. S. N. ed. 12, i, 1766, 286.—Wils. Am. Orn. v, 1812, 91, pl. 43, fig. 1.—Nutt. Man. i, 1832, 626.—Aud. Orn. Biog. i, 1831, 91; v, 1839, 555, pl. 17.

Ectopistes carolinensis Rich. 1837.—Aud. Synop. 1839, 195; B. Am. v, 1842, 36, pl. 286.

Zenaidura carolinensis Bp. 1854.—Baird, B. N. Am. 1858, 604; Cat. N. Am. B. 1859, No. 451.—Coues, Key, 1872, 226; Check List, 1874, No. 371; 2d ed. 1882, No. 544; B. N. W. 1874, 389 (*Zenædura*).—B. B. & R. Hist. N. Am. B. iii, 1874, 383, pl. 58, fig. 2.—Ridgw. Nom. N. Am. B. 1881, No. 460.

Hab. The whole of temperate North America to a little north of the United States boundary (Ontario, etc.); south through Mexico and Central America to the Isthmus of Panama, Cuba, Jamaica, and some other West Indian islands.

Sp. Char. *Adult male.* Above grayish brown, the scapulars with roundish or oblong spots of black; sides, and under surface of wings light grayish blue. Tail, except middle pair, shading from white on outer web of lateral feathers to dark plumbeous on next to middle pair, which are grayish brown; each rectrix crossed, just beyond the middle, by a broad bar of black, after which the gray is considerably lighter than that anterior to the spot. Occiput and nape light pearl-gray, with a glaucous tinge; rest of head pale purplish cinnamon, inclining to whitish on the chin. Breast delicate pinkish vinaceous changing to fine creamy buff on abdomen; crissum pale creamy buff. Sides of neck richly glossed with metallic reddish purple, and just beneath the auriculars a spot of glossy blue-black. Bill black, the cere bluish gray, and rictus lake-red; naked orbital skin delicate pale blue, tinted with greenish; iris deep brown; feet lake-red claws black. Total length (fresh) 12.60–13.00; extent, 17.50–18.25; wing (skin), 5.80–6.10; tail, 6.00–6.50. *Adult female.* Similar to the male, but colors duller. Head light drab, whitish on chin, and scarcely, if at all, bluish on occiput and nape; breast light drab, changing gradually to creamy buff on the abdomen; metallic gloss on sides of neck fainter, and black spot beneath ears smaller and without blue gloss. Size a little smaller. *Young.* Somewhat like the adult female, but much duller, more brownish, and with feathers of jugulum, neck, and upper parts margined or tipped with paler.

The Mourning Dove is found throughout the State and is a permanent resident in most places, though less numerous and of uncertain occurrence in winter. In the spring of 1883 all the specimens shot at Wheatland, Indiana, had the ends of the toes frozen off, showing that they had braved the almost unprecedented cold of the preceding winter. The species have even been known to winter as far north as Canada; Mr. John J. Morley, of Windsor, Ontario, informing Professor Baird (*in epist.*) that he had seen considerable numbers near that place on the 6th of December, 1878, and that he had on other occasions seen it "in various places, from three to twelve at a time."

In the northeastern portion of Illinois, it is according to Mr. Nelson (*Bull. Essex Inst.* VIII., December, 1876, p. 121), "a very common summer resident. The majority arrive the last of March and first of April, and depart by the middle of October. Straggling parties are occasionally observed during the winter. In many places this species becomes semi-domesticated, breeding in the trees in the yard and showing but little fear when approached."

ERRATA.

Page 5, line 2 from bottom, after *that* insert *it*.
Page 30, line 1, for *but* now read *not* now.
Page 70, line 17, for *townsendi* read *townsendii*; line 5 from bottom, before .85 read 3.
Page 88, for *Troglodytidæ* read *Troglodytinæ*.
Page 99, lines 9 and 14 from bottom, for *hyemalis* read *hiemalis*.
Page 121, line 12 from bottom, for *swainisonii* read *swainsoni*.
Page 123, for *Helmitheros* read *Helmitherus*.
Page 133, line 20 from bottom, for *mariima* read *maritima*.

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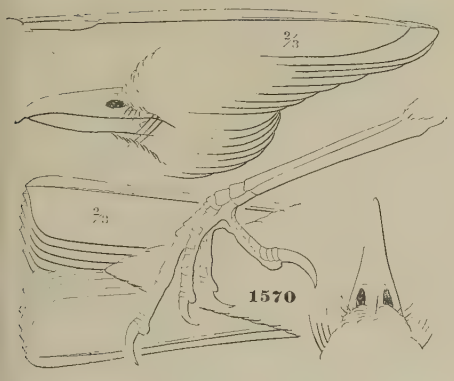
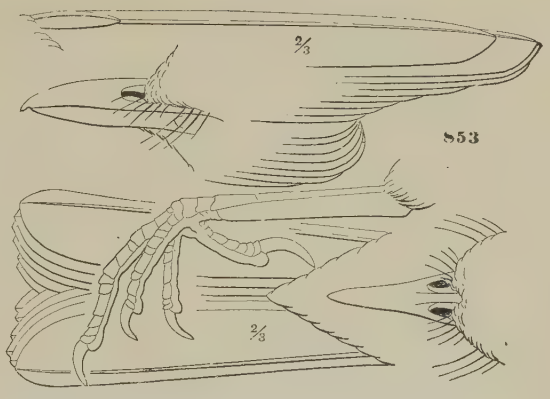
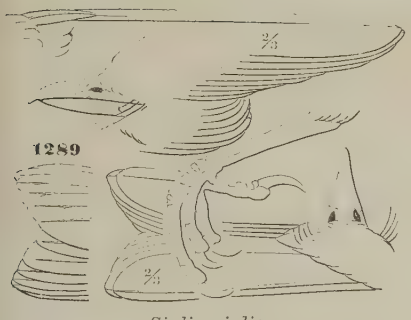


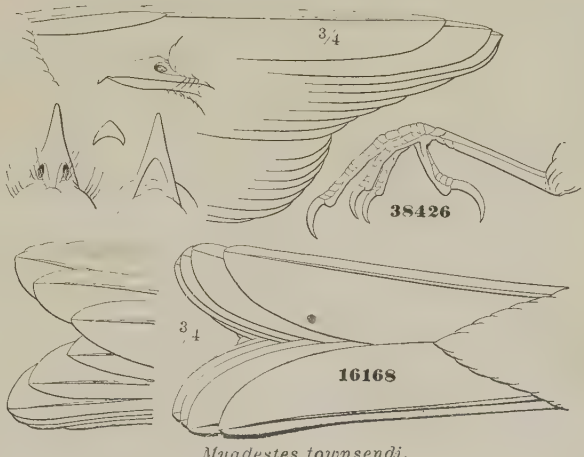
Turdus mustelinus.



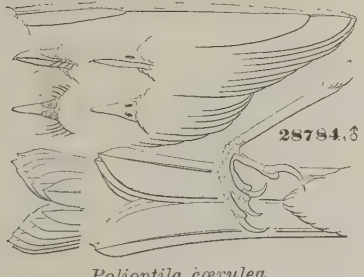
Merula migratoria.



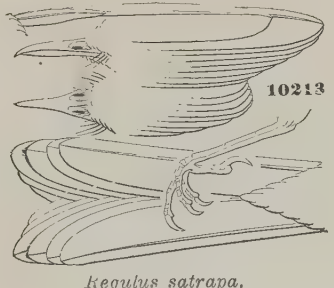
Sialia sialis.



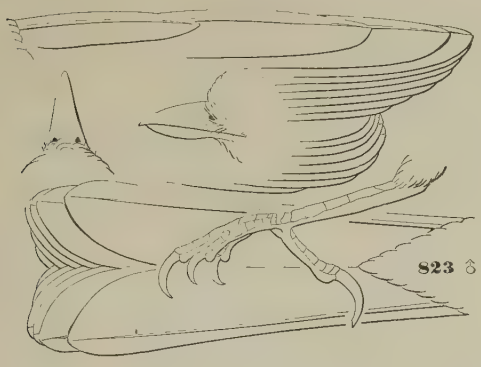
Myadestes townsendi.



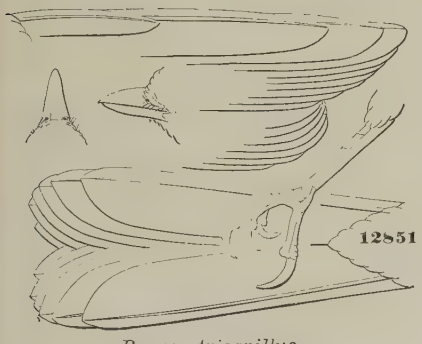
Polioptila cærulea.



Regulus satrapa.



Parus bicolor.



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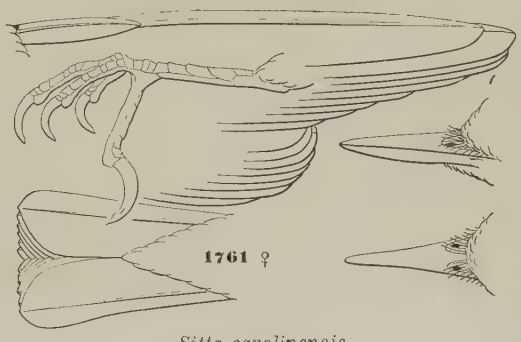
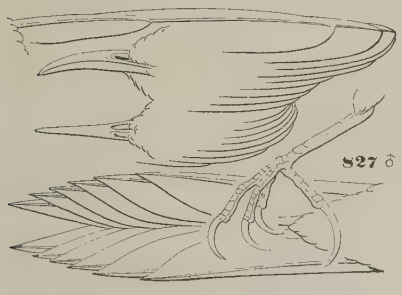
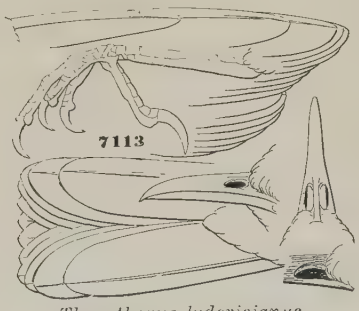


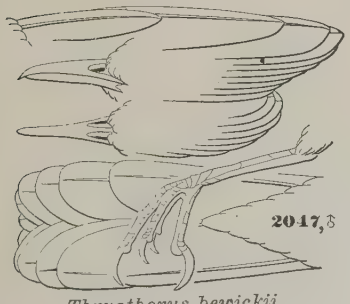
Sitta carolinensis.



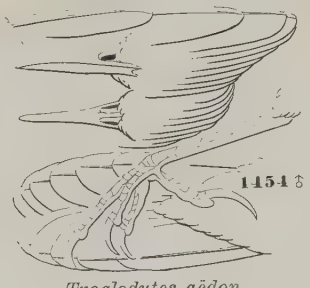
Certhia familiaris americana.



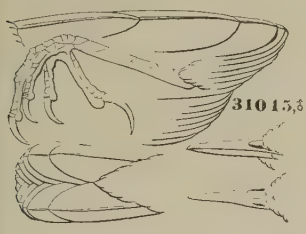
Thryothorus ludovicianus.



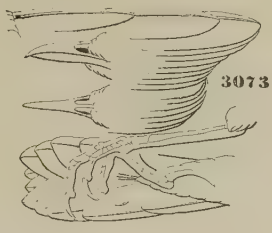
Thryothorus bewickii.



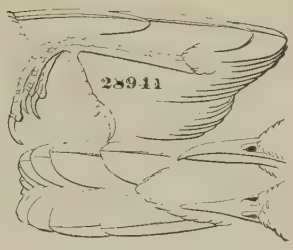
Troglodytes aëdon.



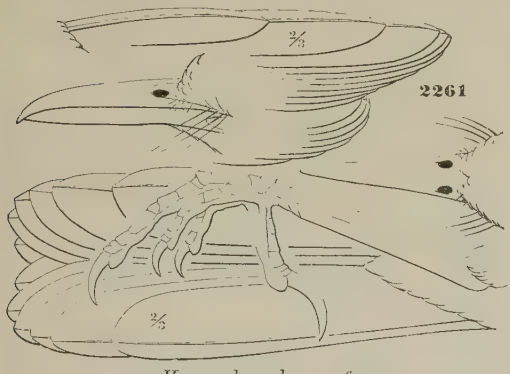
Troglodytes hiemalis.



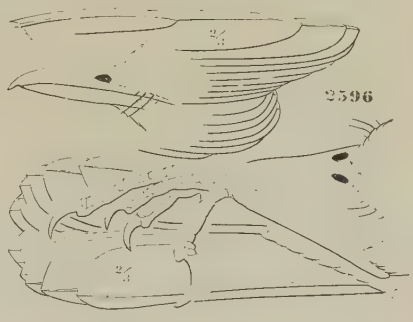
Cistothorus stellaris.



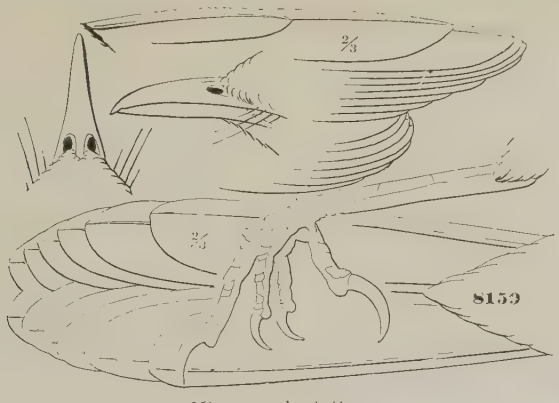
Cistothorus palustris.



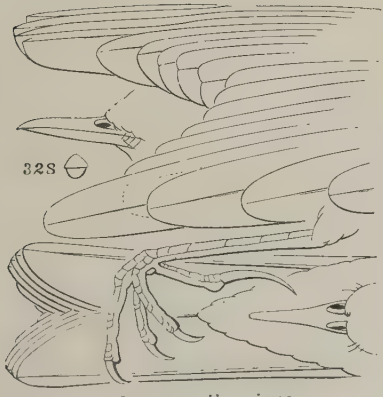
Harporhynchus rufus.



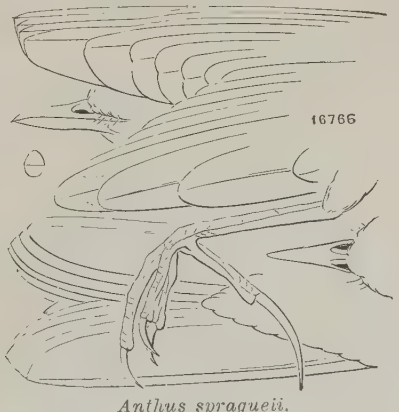
Galeoscoptes carolinensis.



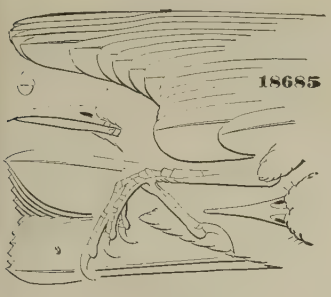
Mimus polyglottos.



Anthus pensilvanicus.



Anthus spragueii.

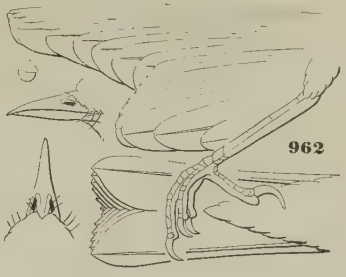


Mniotilta varia.

Protonotaria citrea.

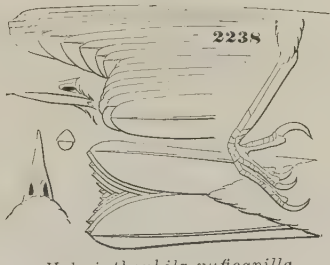
Compsothlypis americana.

Helinaia swainsonii.



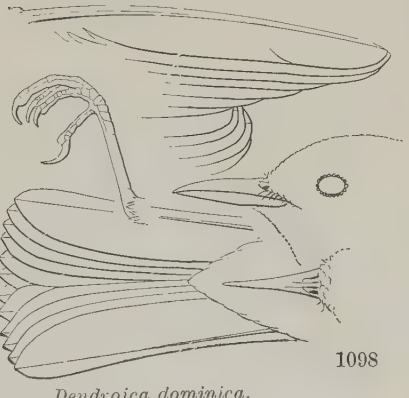
Dendroica tigrina.

Helmitheros vermivorus.

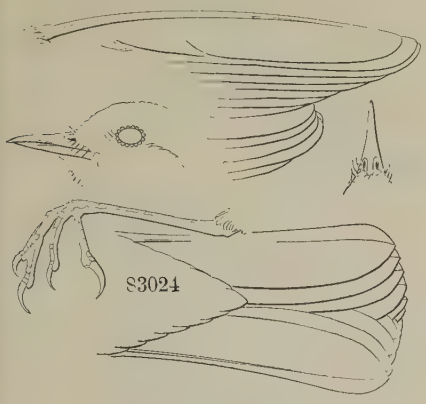


Helminthophila ruficapilla.

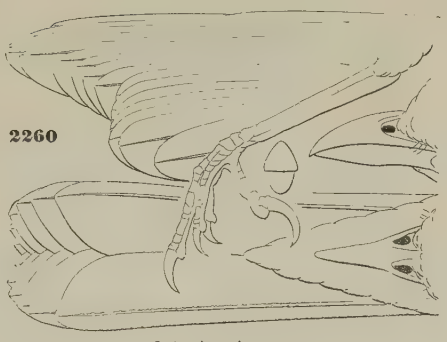
Dendroica coronata.



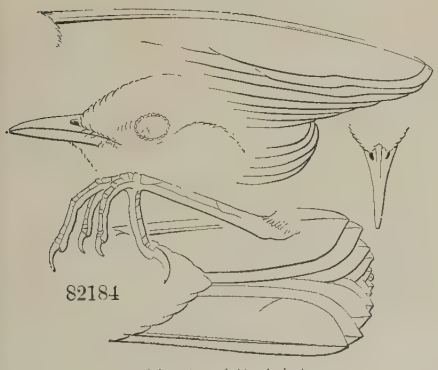
Dendroica dominica.



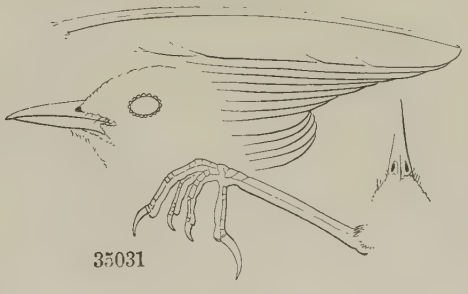
Dendroica palmarum.



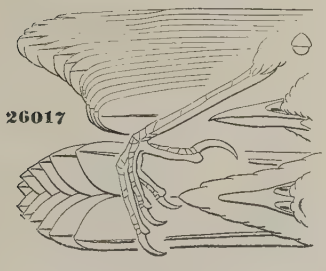
Icteria virens.



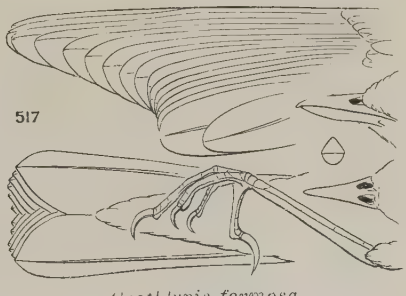
Geothlypis philadelphia.



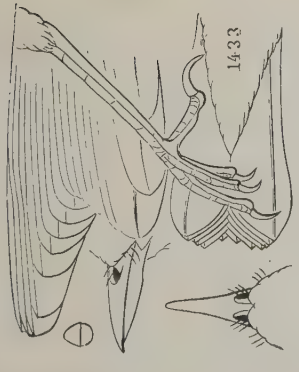
Geothlypis agilis.



Geothlypis trichas.

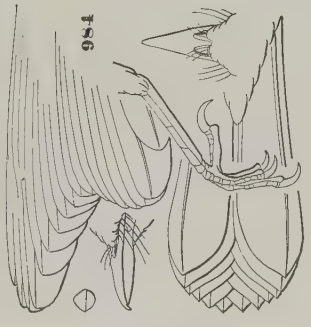


Geothlypis formosa.



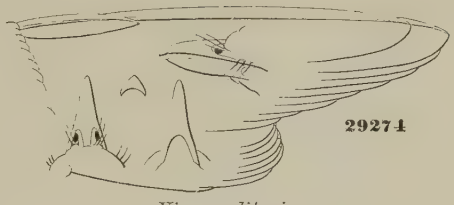
Seiurus aurocapillus.

Sylvania mitrata.

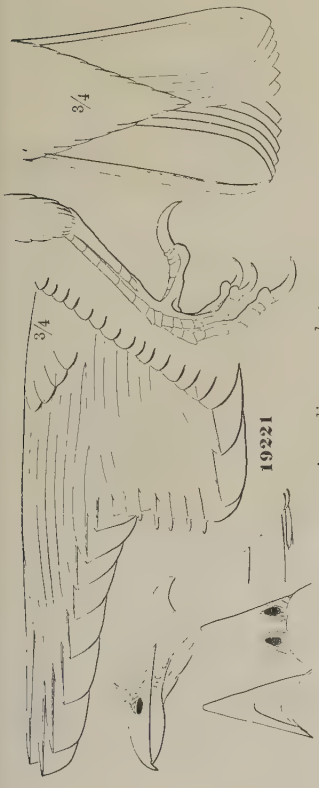


Setophaga ruticilla.

Vireosylva barbatula.

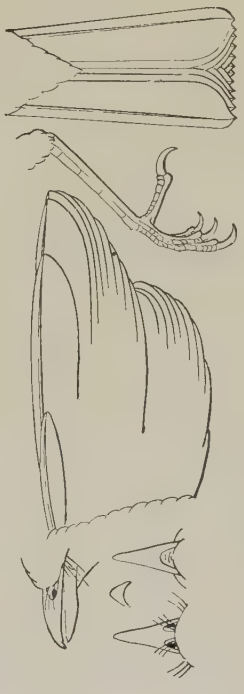


Vireo solitarius.

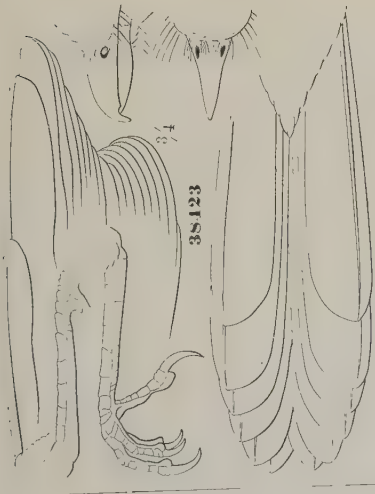


Ampelis garrulus.

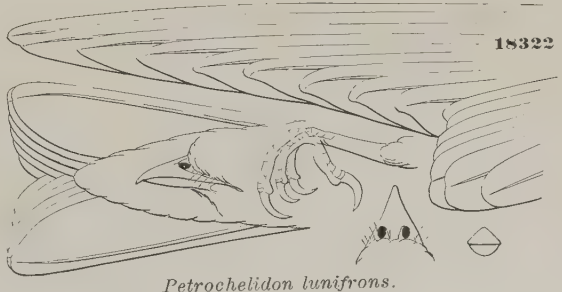
Progne subis.



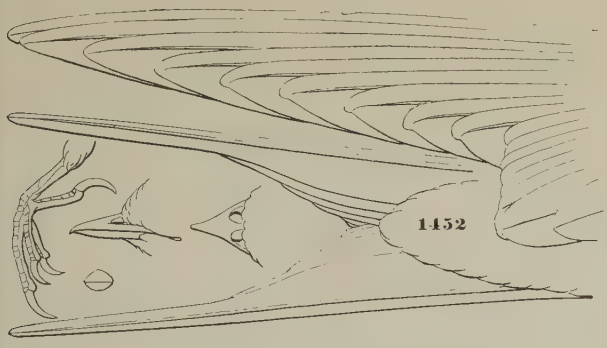
Vireo noveboracensis.



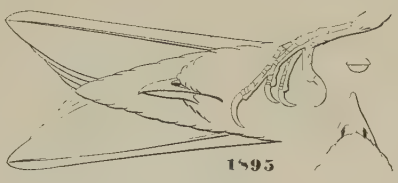
Lanius ludovicianus excubitoroides.



Petrochelidon lunifrons.

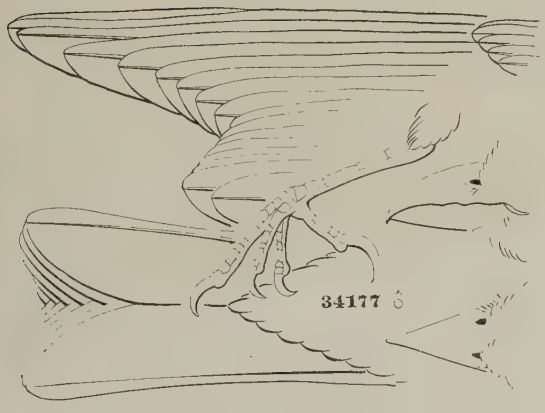


Chelidon erythrogaster.

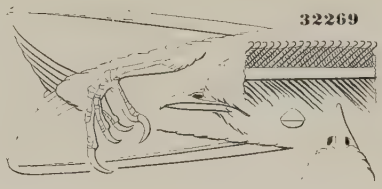


Tachycineta bicolor.

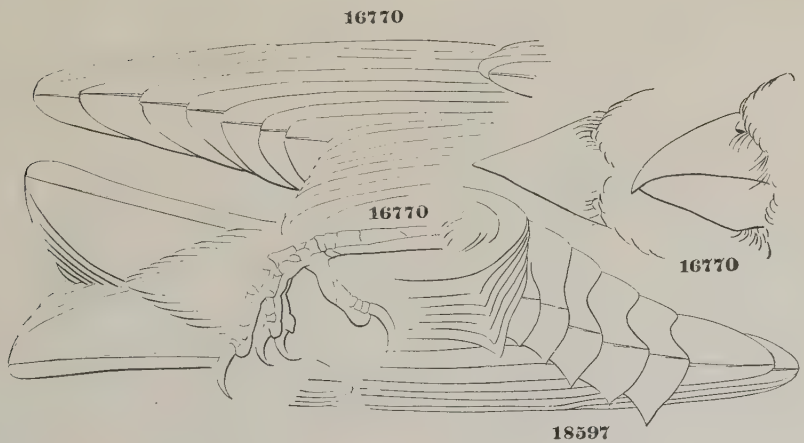
Clivicola riparia.



Piranga erythromelas.

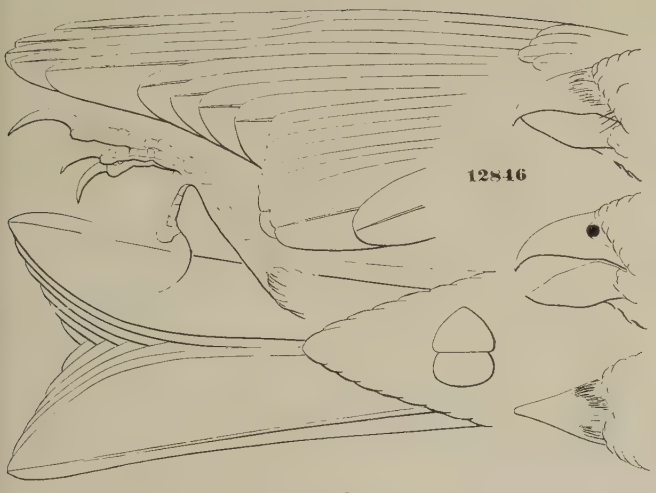


Stelgidopteryx serripennis.



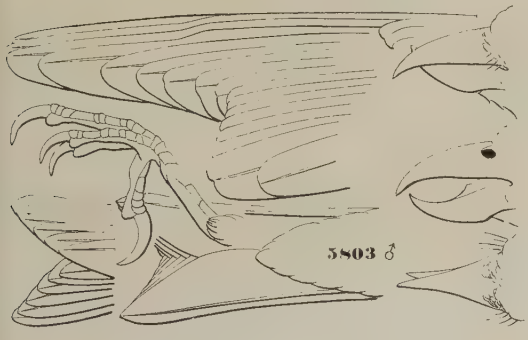
16770
Coccothraustes vespertinus.

Coccothraustes vulgaris.



Pinicola enucleator.

Carpodacus purpureus.

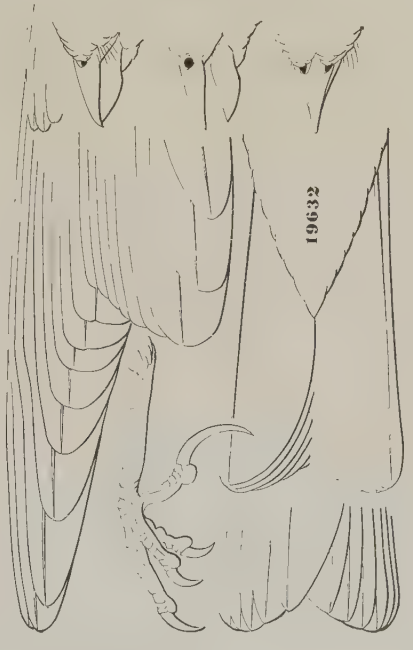


Loxia curvirostra minor.

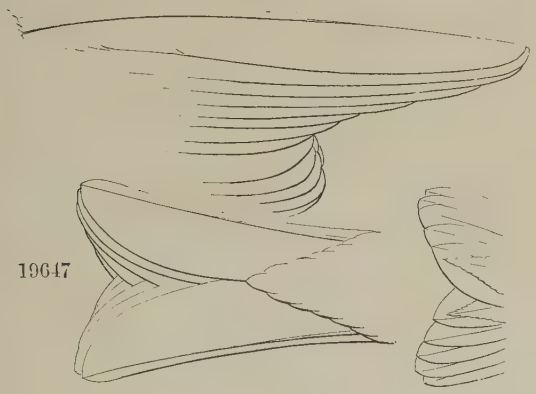
Acanthis linaria.

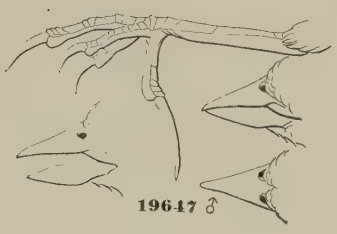
Spinus pinus.

Spinus tristis.



Plectrophenax nivalis.

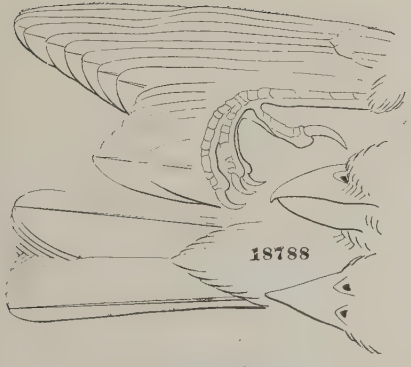




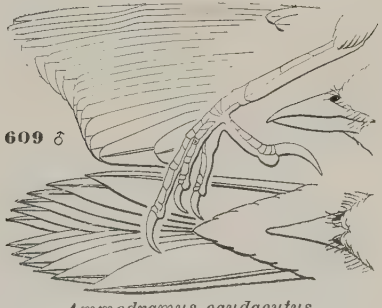
Calcarius lapponicus.

Rhynchophanes mccownii.

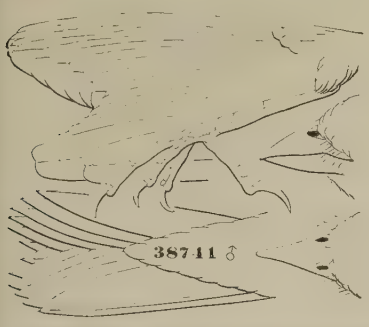
Rhynchophanes mccownii.



Passer domesticus.

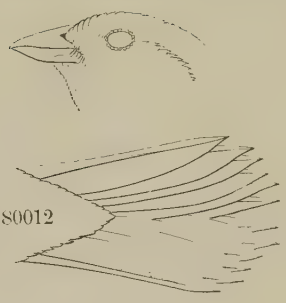


Ammodramus caudacutus.

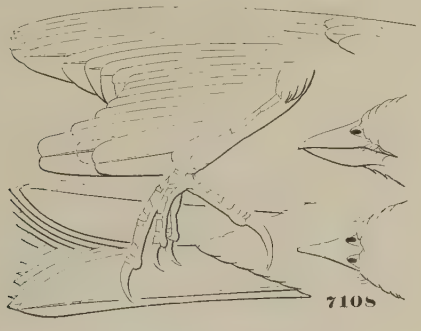


Ammodramus savannarum passerinus.

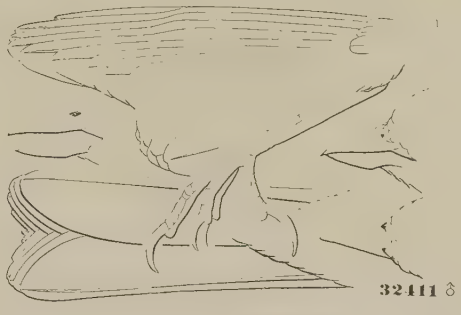
A. henslowii.



A. lecontei.



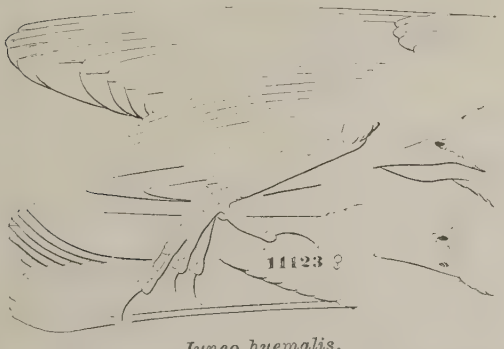
A. sandwichensis savanna.



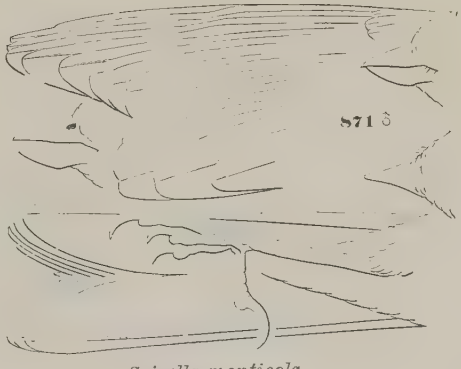
Poocætes gramineus.

Chondestes grammacus.

Zonotrichia leucophrys.



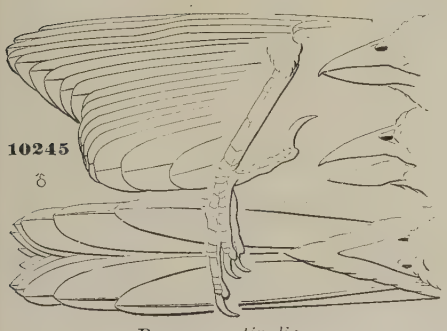
Junco hyemalis.



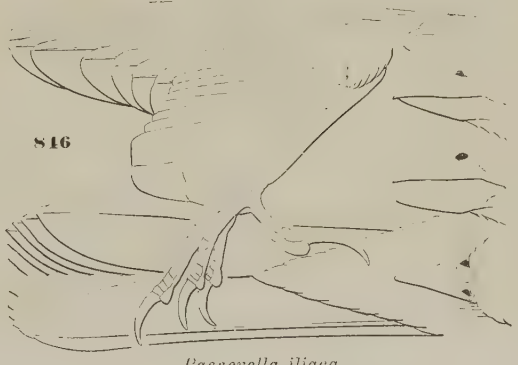
Spizella monticola.

Melospiza fasciata.

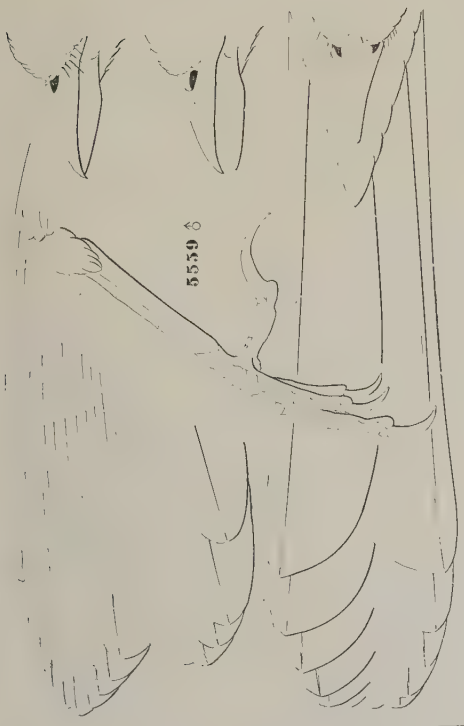
Melospiza georgiana.



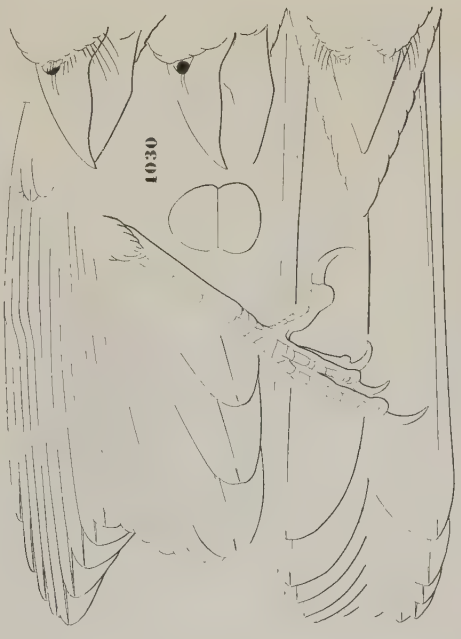
Peucæa æstivalis.



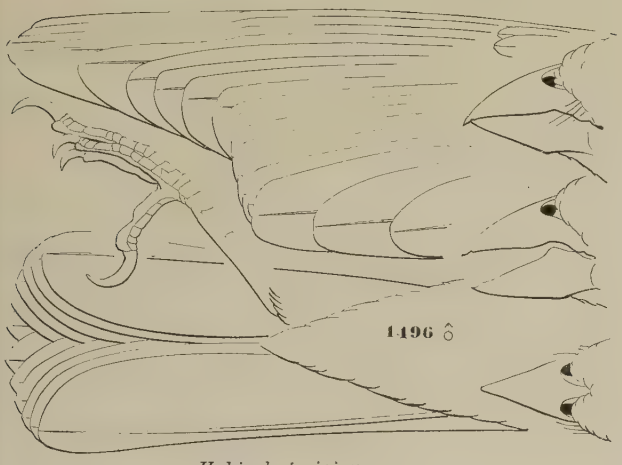
Passerella iliaca.



Pipilo fuscus.

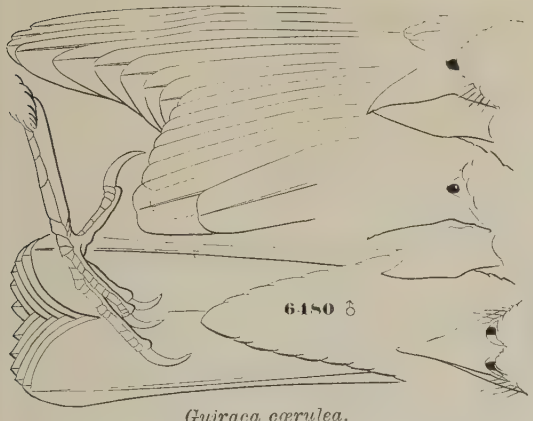


Cardinalis cardinalis.



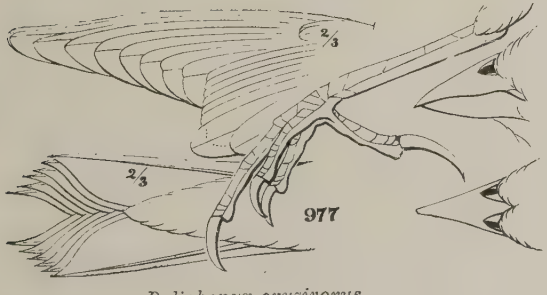
Habia ludoviciana.

Passerina cyanea.

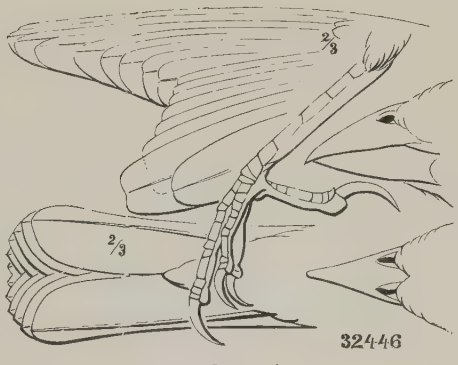


Guiraca cærulea.

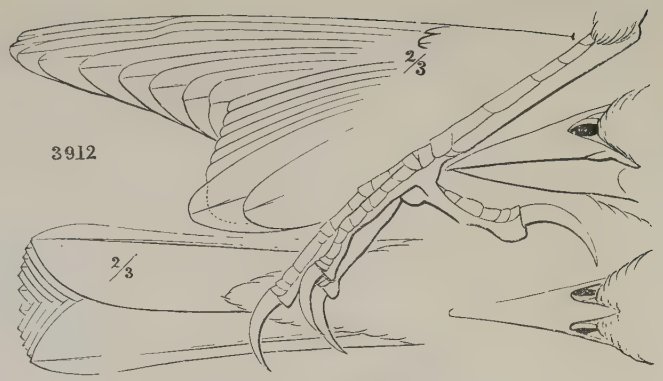
Spiza americana.



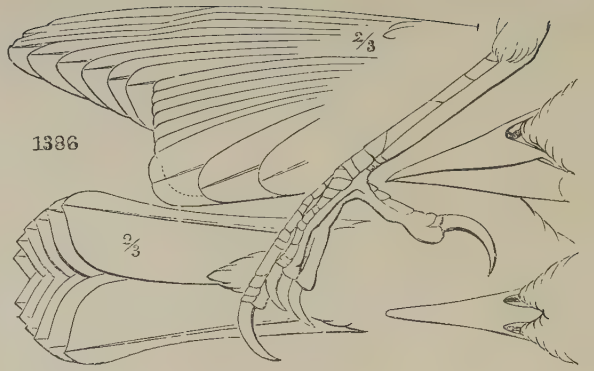
Dolichonyx oryzivorus.



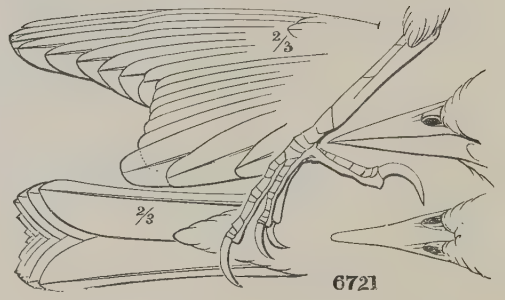
Molothrus ater.



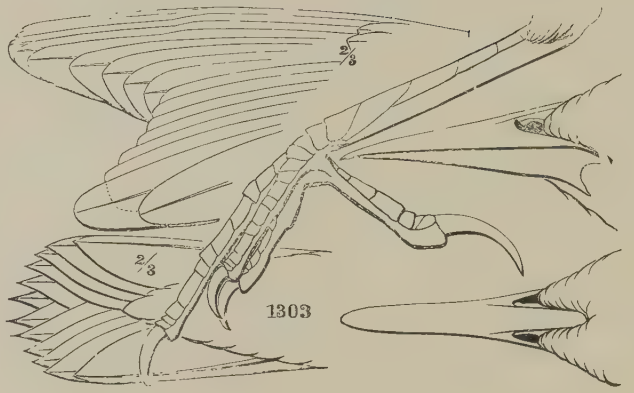
Xanthocephalus xanthocephalus.



Agelaius phœniceus.



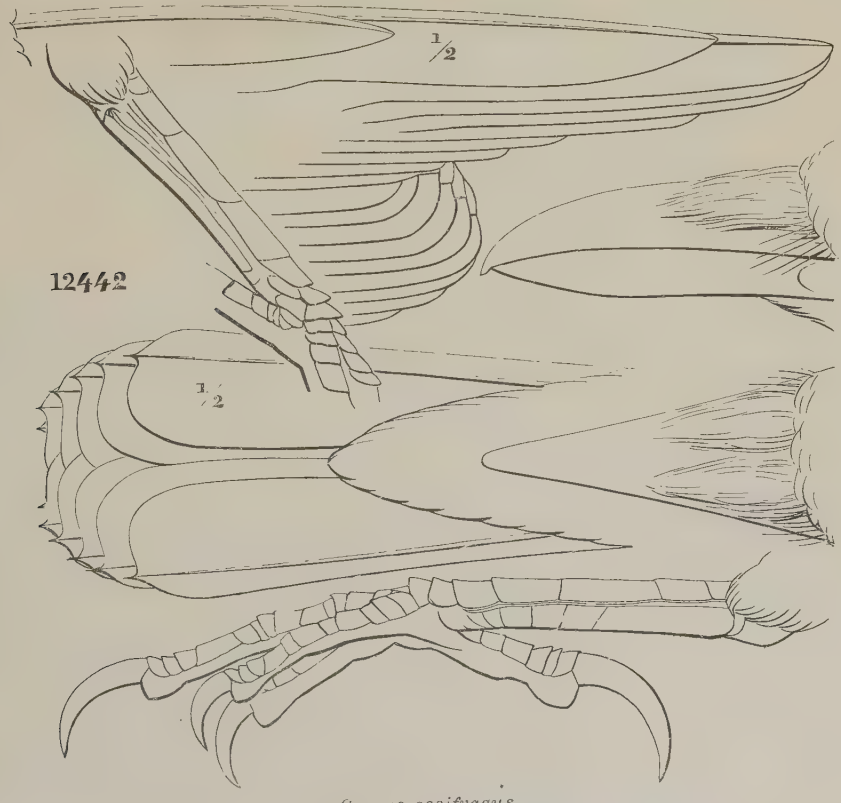
Icterus galbula.



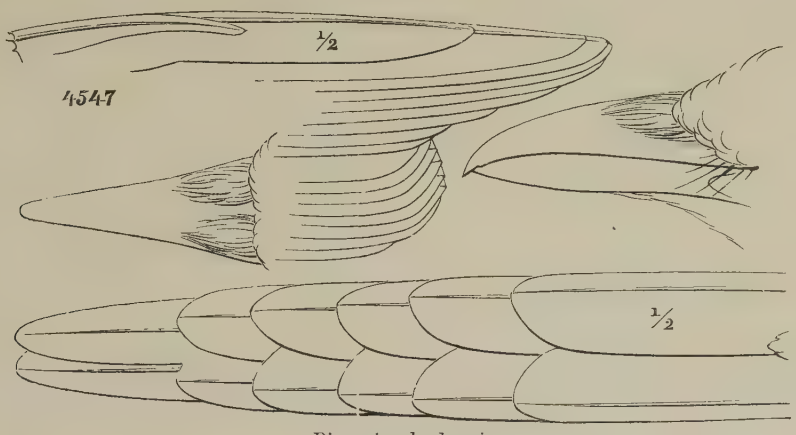
Sturnella magna.

Quiscalus quiscula.

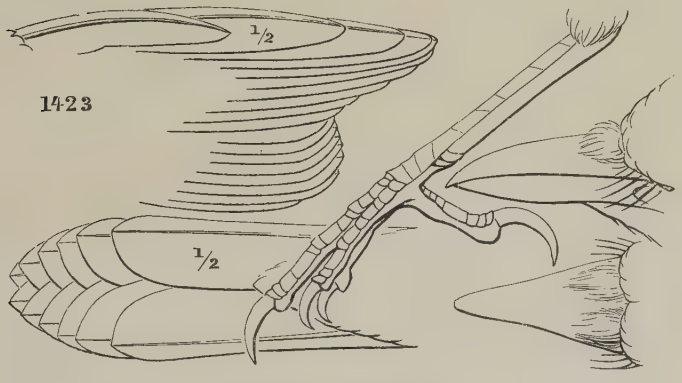
Scolecophagus carolinus.



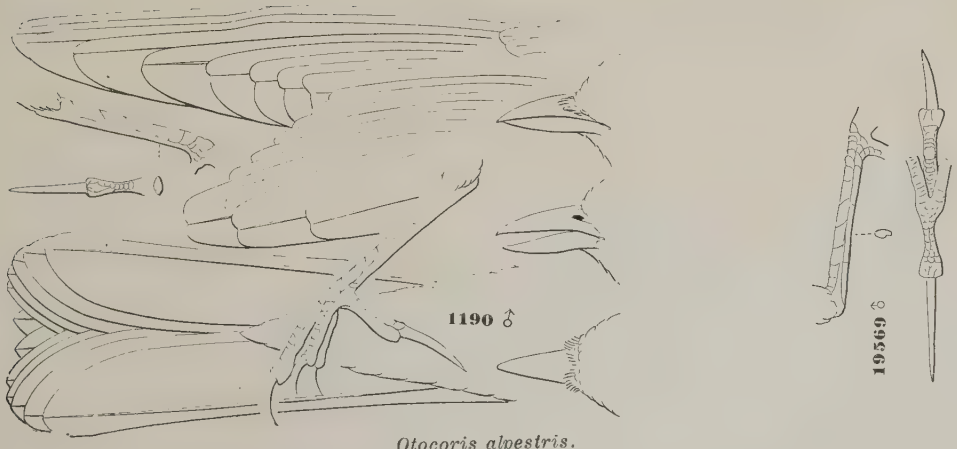
Corvus ossifragus.



Pica pica hudsonica.

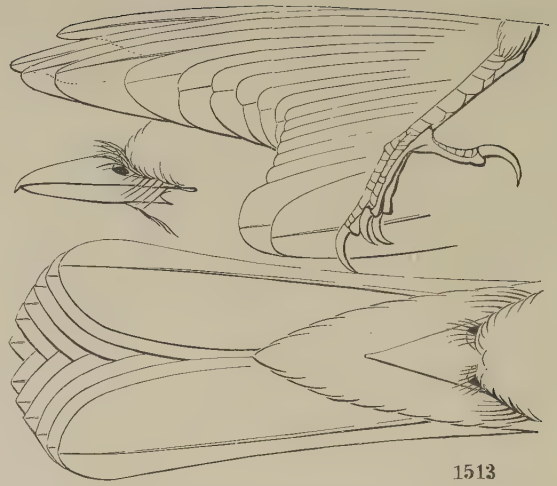


Cyanocitta cristata.

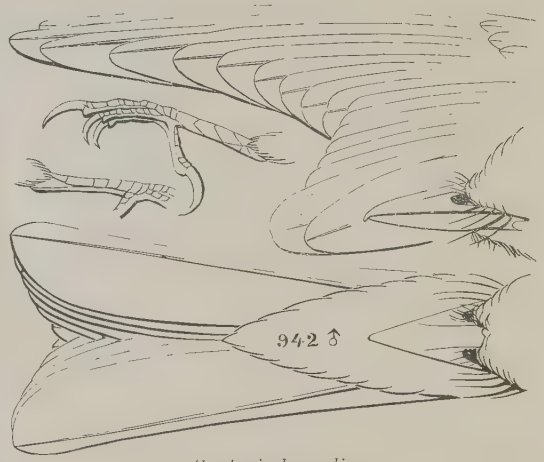


Otocoris alpestris.

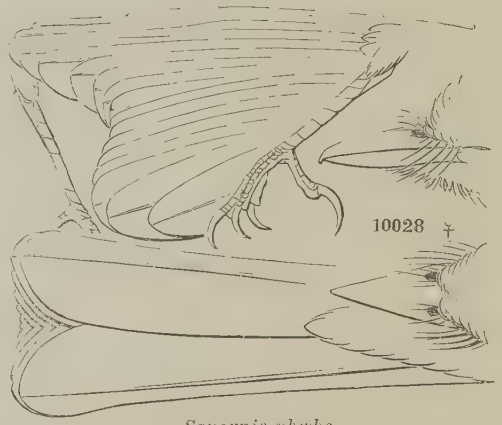
Tyrannus tyrannus.



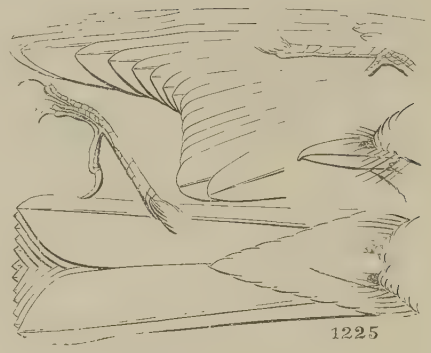
Myiarchus crinitus.



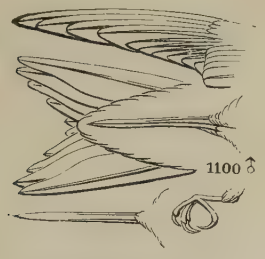
Contopis borealis.



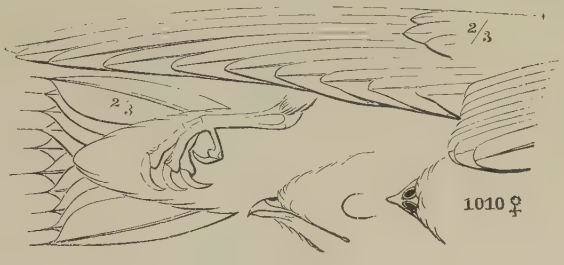
Sayornis phœbe.



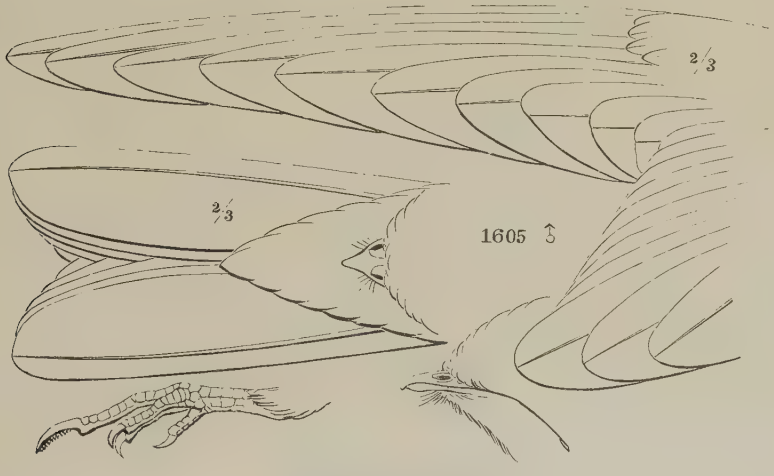
Empidonax acadicus.



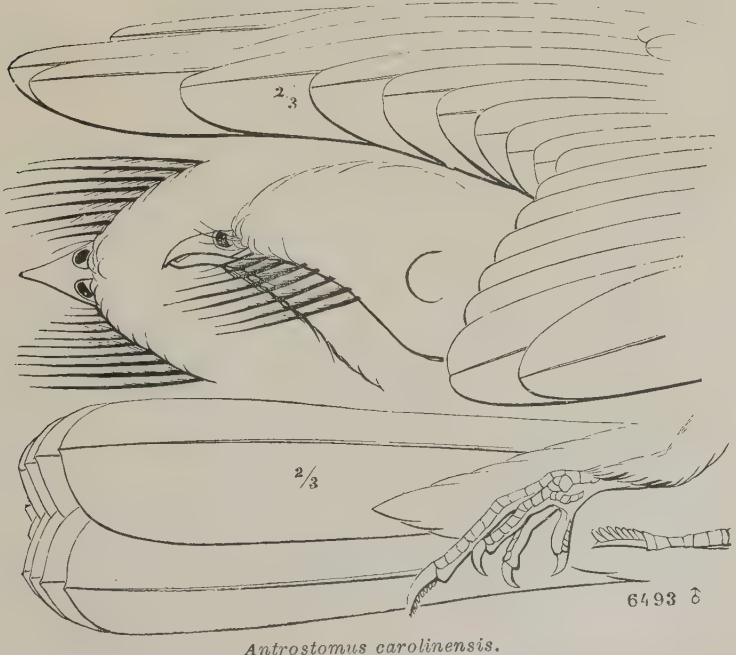
Trochilus colubris.



Chætura pelagica.

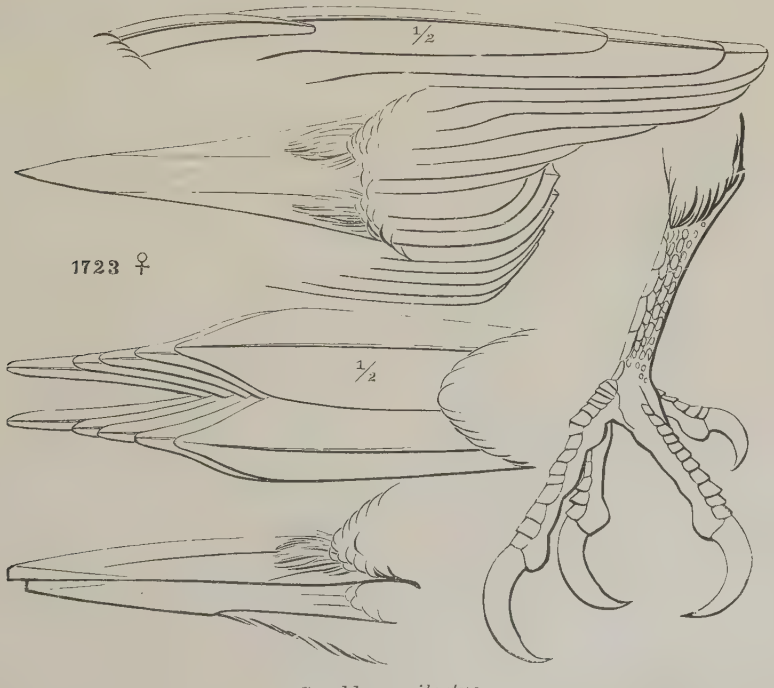


Chordeiles virginianus.

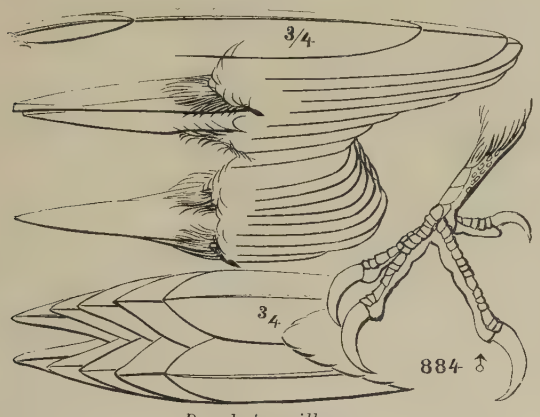


Antrostomus carolinensis.

Campephilus principalis.

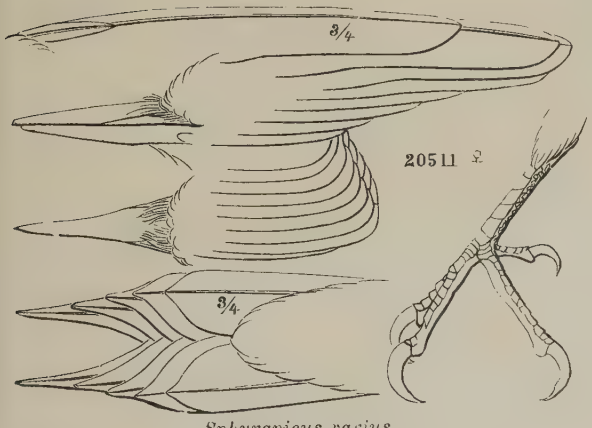


Ceophlœus pileatus.



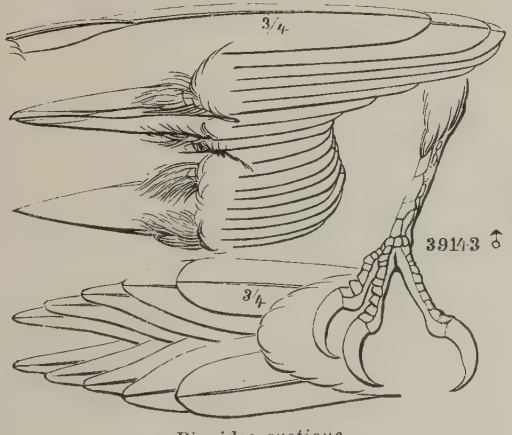
Dryobates villosus.

Melanerpes erythrocephalus.

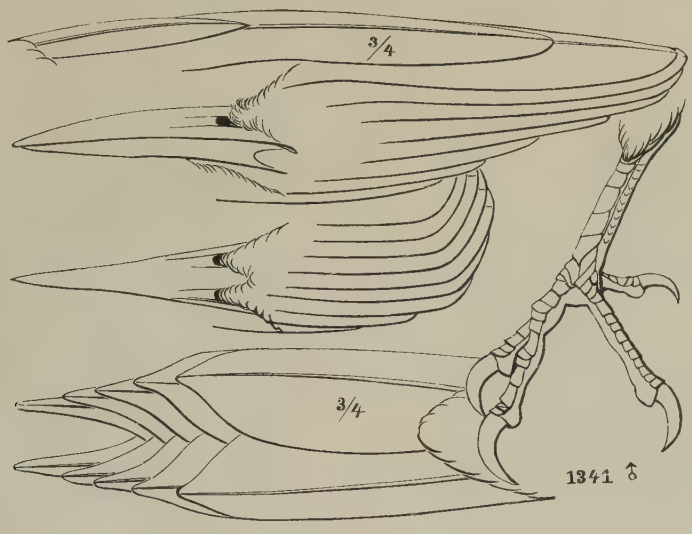


Sphyrapicus varius.

Melanerpes carolinus.

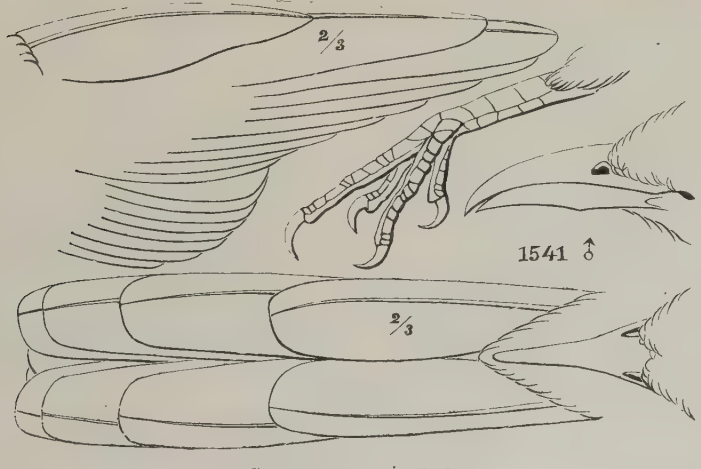


Picoides arcticus.



Colaptes auratus.

Ceryle alcyon.



Coccyzus americanus.

Conurus carolinensis.

Strix pratincola.

Asio wilsonianus.

Asio accipitrinus.

Syrnium nebulosum.

Surnia ulula caparoch.

Nyctala acadica. (Adult.)

Scotiaptex cinereum.

Nyctala acadica. (Young.)

Bubo virginianus.

Nyctea nyctea.

Falco mexicanus.

Megascops asio.

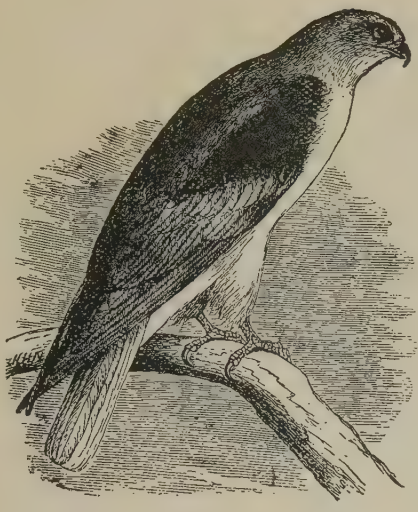
Falco rusticolus.

Falco peregrinus anatum.

Falco sparverius.

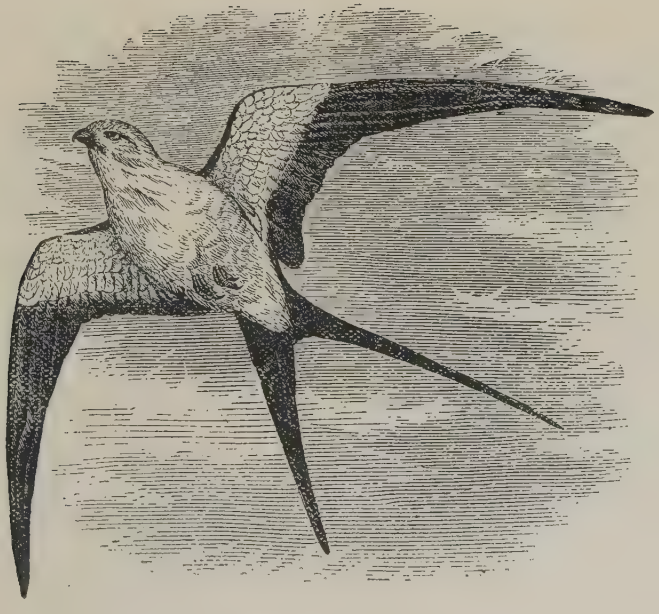
Pandion haliaëtus carolinensis.

Falco columbarius.



Elanus leucurus. (Adult.)

Ictinia mississippiensis.

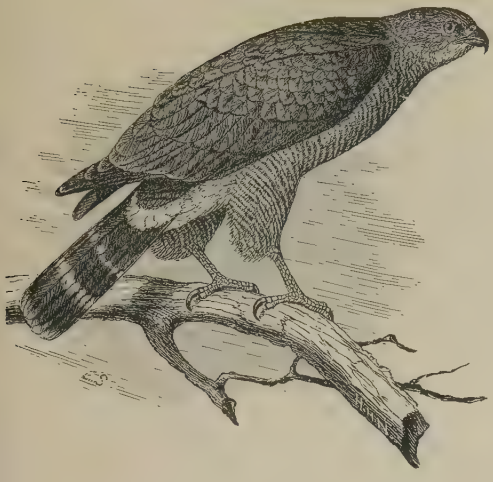


Elanoides forficatus.

Circus hudsonius.

Accipiter cooperi. (Adult.)

Accipiter atricapillus.



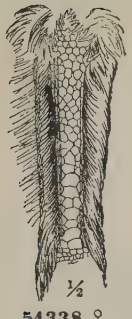
Asturina nitida plagiata.

Buteo lineatus. (Adult.)

Buteo swainsoni. (Adult.)

Buteo borealis. (Adult.)

Buteo swainsoni. (Young.)



½

54338, ♀

Archibuteo.

(Posterior face of tarsus.)

¼

41901, ♀.

Aquila.

(Posterior face of tarsus.)

Archibuteo ferrugineus.

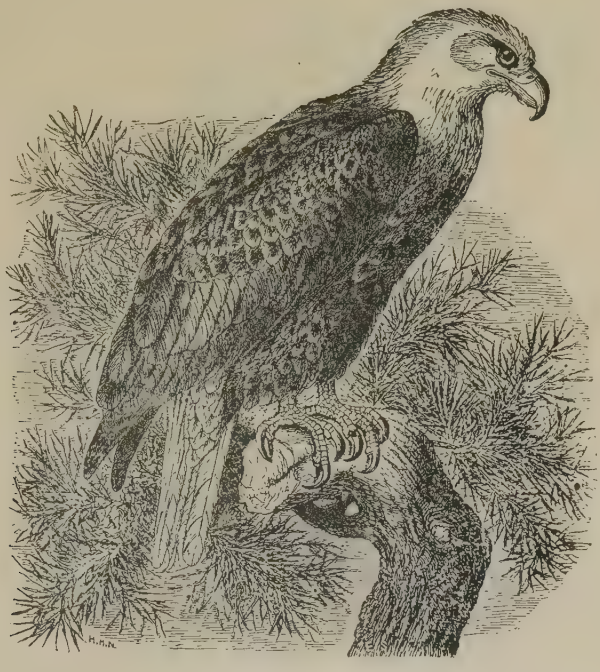
Aquila chrysaëtos. (Adult.)

Archibuteo lagopus sancti johannis.
(Light-colored phase.)

Foot of *Aquila.*

Archibuteo lagopus sancti-johannis.
(Black phase.)

Foot of *Haliæetus.*



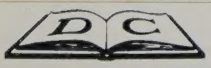
Haliœetus leucocephalus. (Adult.)

Ectopistes migratorius.

Zenaidura macroura.

Cathartes aura.

Catharista atrata.



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